



**Athena SWAN Bronze department award renewal application  
(Ireland)**

School of Physics  
Trinity College Dublin



Date of application: 15th May 2020

Date and level of institutional Athena SWAN award: Bronze award, Nov. 2015

Contact for application: Martin Hegner, Chair of AS Committee School of Physics

Email: [martin.hegner@tcd.ie](mailto:martin.hegner@tcd.ie)

Phone: +353-1-896-2285

website: [www.tcd.ie/Physics/about/women-in-physics/](http://www.tcd.ie/Physics/about/women-in-physics/)

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# 1 Letter of endorsement from the head of department: recommended 500 words

*An accompanying letter of endorsement from the head of department should:*

*(i) confirm their support for the application;*

*(ii) explain how the Athena SWAN action plan and activities in the department contribute to the overall department and/or institutional strategy;*

*(iii) comment on how staff at all levels are, and will continue to be, engaged with the process at present and during the lifetime of the award.*

*Note: If the head of department is shortly to be/has been recently succeeded, applicants may include an additional short statement from the incoming head.*



**Coláiste na Tríonóide, Baile Átha Cliath**  
**Trinity College Dublin**  
Ollscoil Átha Cliath | The University of Dublin

Dublin, 15. May 2020

Application for Renewal of Bronze Award

Dear Athena SWAN Panel,

The School of Physics is committed to providing every student, staff member, visitor and colleague with a rich and supportive environment that provides the best opportunity to fulfil their potential. Therefore, we have whole-heartedly supported initiatives that allowed us achieve IoP Juno Practitioner status in 2013 and the Athena SWAN Bronze Award in 2015. The School completely supports the application to renew the Athena SWAN Bronze Award and confirms that all information presented in this application (including qualitative and quantitative data) is an accurate and true representation of the School.

Since 2013, the School has pursued a strategy to implement initiatives that promote diversity and redress gender imbalance, recognizing the particular historical and cultural difficulties that the subject of Physics has experienced in Irish education.

We have implemented the recommendations made by the Athena SWAN panel following our previously unsuccessful application to renew the Bronze Award in November 2018. A senior academic was engaged to lead the SAT, which includes academic, research, managerial, technical and admin staff and students. We have conducted an extensive, anonymous survey of staff and students, the results of which were analysed externally. We have been supported by the University, which upholds gender equality, diversity and Athena SWAN as cornerstones of its strategic plan. We regularly update staff and students of developments and receive robust support across the School.

Scoil na Fisice  
Dámh na hInnealtóireachta, na  
Matamaitice agus na hEolaíochta  
Coláiste na Tríonóide,  
Baile Átha Cliath,  
Ollscoil Átha Cliath,  
Baile Átha Cliath 2, Éire.

School of Physics  
Faculty of Engineering,  
Mathematics & Science  
Trinity College Dublin,  
The University of Dublin,  
Dublin 2, Ireland.

+353 1 896 1675  
physics@tcd.ie  
www.physics.tcd.ie



I am proud of our progress and the benefits it has brought, particularly given the period of difficult financial constraints from which we were emerging. We have managed to increase student numbers and introduce new courses and course structures, while improving the participation and performance of female students. We have embedded gender balance into all student recruitment activities, e.g. open days, promotional material etc. Our important outreach programmes that promote physics and STEM to second-level students (TYPE and Trinity Walton Club), both maintain gender equality as a central tenet. I would also highlight the efforts made to ensure that we have a level playing field in the assessment of students: we have identified, analysed and addressed gender-related issues in assessment where they existed.

We are also continuing to make headway on the thorny issue of attracting suitably qualified female physicists to academic positions. The likely imminent appointment of a female Assistant Professor is not included in the data. I note too that we have employed a number of couples in academic/academic and academic/admin pairings, a task that requires considerable effort and finesse.

We are a united School, working to foster and maintain excellent morale. We are rightly proud of our tradition of integrating all staff members and make extra efforts in our monthly coffee mornings to ensure a spirit of inclusion and participation.

Despite our achievements to date, challenges remain. For example, future staff recruitment numbers are likely to be small, limiting our scope to improve the gender balance. Budgets are likely to remain tight, therefore resources may not be as readily available as one wishes. We also acknowledge the new overriding challenge that COVID-19 presents and the impact it will have on every aspect of our work in the immediate future, particularly the negative financial impact this crisis is likely to have on the School.

With best wishes,

Head of School



Prof Igor Shvets

*Word count: 542*

## 2 The self-assessment process: recommended 800 words

*Describe the self-assessment process. This should include:*

*(i) a description of the self-assessment team (SAT), including members' roles (both within the department and as part of the team) and how and why the team were selected; for example, any consideration of gender balance, members' expertise or experience with gender and/or equality issues, work-life balance arrangements or caring responsibilities.*

*(ii) an account of the self-assessment process, with details of:*

- *when the team was established;*
- *how often the team has met;*
- *what the focus of the meetings has been;*
- *how the team has consulted with members of the department and students;*
- *what consultation (if any) has occurred with staff or individuals outside of the institution/department;*
- *what the internal and external reporting mechanisms of the team are.*

*(iii) plans for the future of the SAT, including:*

- *how often the team will continue to meet;*
- *how the SAT intends to monitor implementation of the action plan;*
- *how the SAT intends to interact with staff;*
- *whether the membership of the group will change;*
- *what the internal and external reporting mechanisms of the team will be.*

### (i) Description of the self-assessment team

Figure 1 shows the composition of the Athena SWAN SAT (SAT), as of 1st March 2020 (13 members 60% M, 40% F). The SAT has strong representation from all levels of the School community, including senior male and female members of the academic staff, support staff (administrative and technical) and student representatives. 7 members have parental/caring responsibilities and 9 members have dual-career families. **Members of the team are selected either based on their willingness to be part of the committee or based on their key responsibilities in the management of the School.** The latter provides direct access to School management, thus changes suggested by the committee can more easily be implemented at School level. The members remain for a minimum of 2 years. **All the members of the SAT committee (including students and postdocs) have taken face-to-face Unconscious Bias training and so will any future member.**

**Action 2.1** All staff and student members will attend SAT unconscious bias - and awareness training. **Thorough this submission the Actions mentioned in the main text are brief descriptions, the details are highlighted in the last seven pages.** *The words within the action fields are not counted against the total word count.*

### (ii) The self-assessment process

The first SAT was established in 2012 and normally met quarterly. Smaller sub-groups (3 persons) meet every six weeks depending on the activities (data collection, website maintenance, follow-ups after AS Champions network meetings). Recently, monthly meetings














	Martin Hegner (b): Chair Physics SAT, member of the University Athena SWAN SAT; Professor in Physics		John Donegan (a,b): Deputy chair Physics SAT; Professor in Physics; Director of Global Relations
	Louise Bradley (b): Led our 1st JUNE application; Professor in Physics		Kenneth Concannon (a,b): Chief Technical Officer
	Annalisa DePastina: postdoc representative		Mauro Ferreira (a,b): Director of Postgraduate Teaching and Learning; Associate Professor in Physics
	Prof. Kate Maguire: Assistant Professor, previous SAT member at Queen's		Cormac McGuinness (b): Outreach coordinator and Course Director of the new Physical Sciences Course; Assistant Professor in Physics
	David O'Regan: Deputy Director of Undergraduate Teaching and Learning; Assistant Professor in Physics		Katarzyna Siewierska (a): Postgrad Student representative
	Igor Shvets (a,b): Head of School (HoS); Professor of Physics		Colm Stephens (a): School administrator
	Aline Vidotto: Previously Chair Physics SAT; Associate Professor in Astrophysics		

Figure 1: Composition of the Athena SWAN self-assessment team (SAT) as of March 2020 (alphabetical order). Roles are: a: Reporting to the Executive; b: Parent/caring responsibilities.

focused on our preparation of this renewal-application and/or subsections of the application taking on board the feedback received have taken place. Gender-related matters arising are also discussed at the SAT meetings and, when required, new actions are created.

The Physics SAT Chair is also a member of the AS champion network that meets monthly and reports Trinity activities to the Physics SAT and vice-versa. The SAT also reports quarterly to the Dean of the Faculty of Engineering, Maths and Sciences (FEMS) (Figure 2). Physics interacts with other schools regularly in university AS champion meetings where

the schools share best practice. **We have also met with other FEMS schools currently applying for an AS award to share our successful actions, school questionnaires and also challenges.** Figure 3 outlines other internal and external reporting routes/linkages of the SAT.

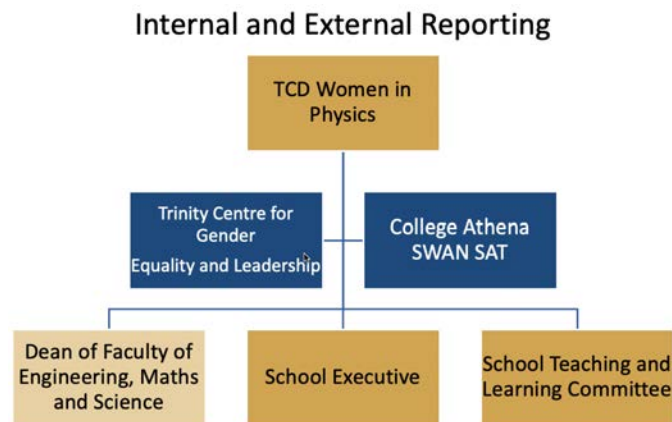


Figure 2: School Internal (dark ochre), Faculty (light ochre) and External (blue) (within university) reporting to School and university committees.

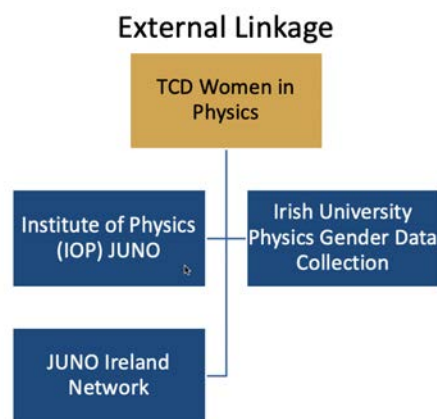


Figure 3: External (blue) (outside university) linkages with relevant national/international groups.

Table 1 shows the routes that SAT consults with members of the School.

On a bi-annual basis we will conduct Athena SWAN (AS) surveys, that allow anonymous reporting to the SAT. The survey was first released in the period 2019/2020 and targeted 227 members of the school (Academics, Postdocs, Support Staff, PhD students). The survey was returned by 57% of those invited. In particular, the return rate of the female school members was at 67% (41/61 F total) whereas the male return rate was at 50% (82/164 M total), 83% in the case of male academics only.

The survey was comprehensive with 85 questions and was organised in the following main sections: 1. Current Employment Status; 2. Career History and Aspirations; 3. Work-Life Balance; 4. Department/School or Research Unit Environment; 5. Bullying and Harassment; 6. AS Project; 7. Social Attitude; 8. Demographic Information 9. Survey related.

Figure 4 indicates (left) the percentage participation of the school members in the anonymised school survey and (right) the gender distribution within the three targeted categories. Focus

groups and interviews were held following the survey to assess the mix of qualitative and quantitative information, whereby the issues that came out of the survey were delved into more deeply.

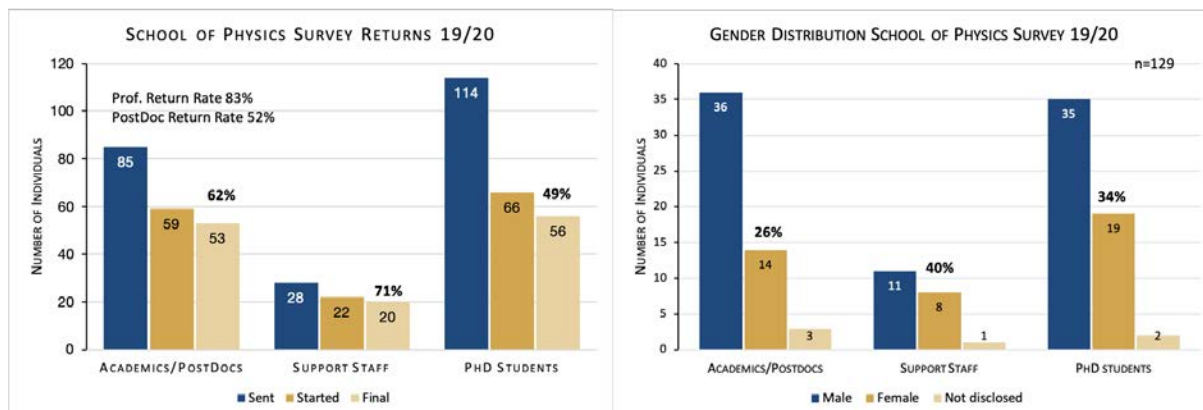


Figure 4: Numbers of Academics / Postdocs, Support Staff and PhD students invited to participate (blue) and finally concluded (light ochre) in the anonymous online survey.

**A dedicated funding account has been setup from the school overhead to financially support the activities related to Women in Physics (WiP) (evaluation of survey by consultant, social gatherings, etc.).** We will continue to seek funding/support for the school's dedicated AS activities at university level.

**Action 2.2** Revise AS survey question with input of SAT and School wide call for topics every two years. Gather anonymous qualitative data bi-annually to monitor the experience of staff and students, by gender, and identify any issues arising. Presentation of AS survey to school bi-annually, define actionable topics. The general AS Survey should become centralized at University level with 10% school specific questions. This will save multiple spendings across college by all the schools for identical topics. Small dedicated surveys will be interspersed at the schools own initiative throughout the award period.

**Action 2.3** The school committed substantial funds for this submission (see chapter 2 Action points at the end). Ensure continuous funding/support for AS activities at School of Physics and University level remain available in the current recession.

Another important source of communication is our website <http://www.tcd.ie/Physics/about/women-in-physics/>, in which we describe committee activities, our initiatives, Trinity policies and News (Figure 5). A link to our website is prominent in the Physics homepage.

### (iii) Plans for the future of the SAT

The SAT will continue to meet every 6-8 weeks. The schedule of meetings is circulated to the whole School of Physics and we seek topics for discussions at these meetings. Smaller sub-groups will review targets and progress on the action plan between team meetings. The SAT will continue to interact with staff and students via the strategy described in (ii) above and via the website. The SAT membership is under constant review in terms of staff



Table 1: SAT consultation with members of the department and students.

Consultation with	Mechanism/route
Academic, Admin and Technical staff	School Executive meetings
	Undergraduate and Postgraduate Teaching and Learning committee meetings
	Staff meetings and academic staff meetings
	Athena SWAN survey (Academics, Support Staff)
	Morning coffee and First Thursday coffee (informally)
Research staff / PostDocs	Via postdoc representative in the SAT
	Athena SWAN survey (PostDocs)
	Pizza night events
UG and PG students	Athena SWAN survey (PhD and MSc)
	Staff-student routine interactions (lectures, tutorials, etc)
	Via student representative in the SAT
Prospective students	Pizza night events
	Physics open days, College open days, Transition year students (week and day events), Trinity Walton Club surveys

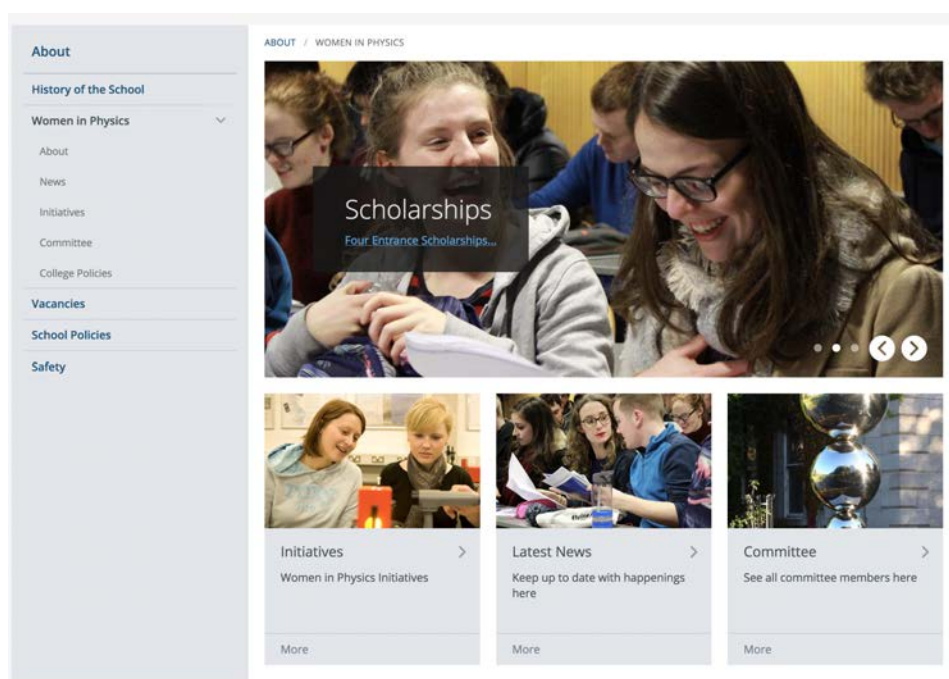


Figure 5: Women in Physics - WiP website.

with caring responsibilities, staff categories, seniority and staff with key reporting roles. Because the members of the School Executive rotate every three years, one proposed action item is to revise SAT membership when this occurs so that members will serve for a period of two years at least. This will improve monitoring and implementation of our action plan.

**Action 2.4** Revise SAT membership annually and plan for phased rotation of membership over 3 year period.

**Action 2.5** We re-submit under the initial AS charter. Source and monitor new charter items for the future renewal starting next year. Keep updated with Athena SWAN development in Trinity.

Word count: 753

### 3 A picture of the department and its composition: recommended 2000 words

#### 3.1 Brief description of the department

*To set the context for the application, please provide a brief description of the department, including its size, and outline any significant and relevant features. For example, recent changes of departmental structure or management, the existence of any quasi-autonomous groups or the management of split-site arrangements.*

In 2020, Trinity Physics has 29 academics (14% F), 26 support staff (46% F), 56 postdocs (27% F) and 114 postgraduate students (26% F). Support staff numbers slightly lower than in the conducted survey due to fluctuations. Our department is small compared with many UK Physics departments. The School is spread over 5 buildings in Trinity. Our morning coffee have been particularly successful in gathering staff from different locations in one place.

Gender distribution within the department is shown in figure 6. Detailed info available at <https://www.tcd.ie/Physics/>

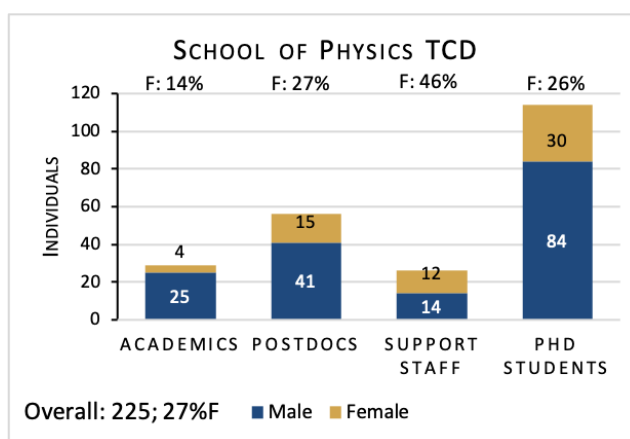


Figure 6: Gender distribution of the School of Physics, Trinity College Dublin, University of Dublin, Ireland

Where possible, for each of the following sections (3.2 and 3.3):

- Provide data/statistics (numbers and percentages) for at least the past three years, with commentary on their significance. Where possible and relevant, use clearly-labelled graphical illustrations.
- Comment and reflect on the proportions/percentages of women and men compared with the national picture for the discipline(s). If benchmarking data is unavailable, or if it is felt that it may not be appropriate, a clear explanation must be provided.
- Comment and reflect on any differences in data for men and women.
- Describe any initiatives implemented to address any possible imbalance and biases, and any impact to date.
- Comment upon any plans for the future, including how any gaps in the data will be addressed, and refer to specific, numbered actions that appear in the Action Plan.

## 3.2 Student data

In 2013, Trinity Physics pioneered the collection of gender-disaggregated data across the seven University Physics Departments in Ireland. In 2016 the role moved to another University. **Our latest national benchmark data are from October 1st 2019, which is the date of all reported data throughout this application. In a report by the Irish HEA from 2019<sup>1</sup>, the average percentage of female Physics graduates in Ireland over the last 7 years was 20% while in Trinity it's 24%. Student data collection is currently a resource-intensive process. No central gender desegregated student number and grade distribution data are available in Trinity, all the data presented here had to be manually extracted by the school.**

**Action 3.1** Collect annually National University Physics data of students, postgraduates, postdocs and staff in collaboration with partner Universities.

**Action 3.2** Request change in Student Information System (SIS) to automatise gender segregated student data export (general and exam performance) within Trinity.

### 3.2 (i) Numbers of students in foundation courses

In 2018 by introducing the new Trinity Education Program we restructured the foundation physics course. In the last two years an average of 158 students enrolled. The intake of female students from other Science streams at foundation level is considerably higher (57%F) than the regular Physics streams (29%F, see table 6). Figure 7, left, shows the enrolled numbers of males (M, blue) and females (F, ochre), while on the right the exam grade % distribution in this cohort. The exam performance of the females surpasses males.

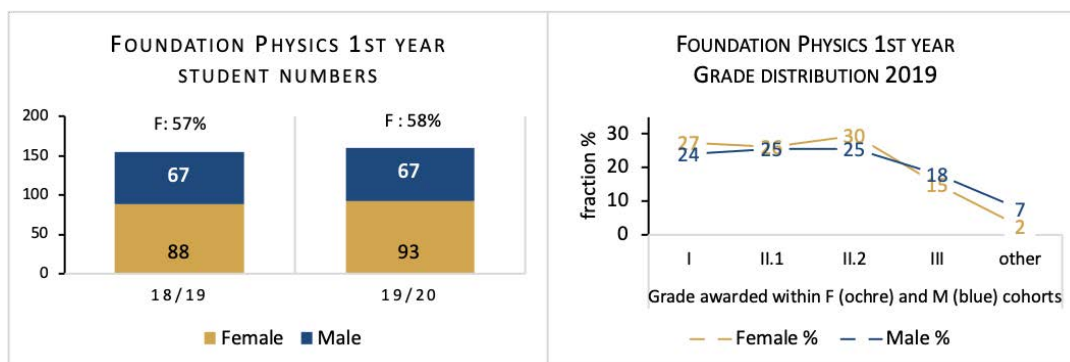


Figure 7: Left: Numbers of students enrolled in the Foundation course female (ochre) vs male (blue). The restructuring in 2018 did not affect gender distribution but increased the student number 3-fold. Right: Grade distribution of F and M, over the last two years in the foundation physics course.

### 3.2 (ii) Numbers of undergraduate (UG) students: full- and part-time

*Provide data on degree attainment and completion rate by gender.*

<sup>1</sup>An Analysis of Labour Market Earnings for Higher Education Graduates in their Early Careers HEA Ireland 2019



Physics undergraduates are full-time. In October 2019, we had a total of 602 undergrad students (33% F), 99 students taking final year Physics (29% F, Table 2). Trinity's percentage of females taking final year Physics fluctuates around the national average of 24% (Figure 8, left), as collected within the Physics University network.

Figure 8, right, shows the percentages of males (M) and females (F) obtaining higher grades (II.1 or I). While nationally, M have had similar performance within their cohorts (TCD and National), TCD F have underperformed M at higher grades from 2014 to 2016. The situation reversed in 2018 and 2019, when we saw a record average of ~88% F graduating with higher grades, a better performance compared to the national values in both genders.

Table 2: Number of students taking final year Physics in TCD (top) vs national (bottom).

TCD	2019	2018	2017	2016	2015	2014	2014-2019
Number final year physics students in TCD	99	88	77	64	65	60	453
Number of females	29	14	21	14	13	19	110
%F	29%	16%	27%	22%	20%	32%	24%
Total number of higher degrees (I, II.1) awarded	81	67	50	43	40	34	315
Number of females with higher degrees (I, II.1)	26	12	15	6	5	8	72
%F	90%	86%	71%	43%	38%	42%	65%
%M	79%	74%	63%	74%	67%	63%	71%

National	2019	2018	2017	2016	2015	2014	2014-2019
Number final year physics students in Ireland	330	304	216	210	224	229	1513
Number of females	92	70	50	46	52	53	363
%F	28%	23%	23%	22%	23%	23%	24%
Total number of higher degrees (I, II.1) awarded	n.a.	196	155	145	134	126	756
Number of females with higher degrees (I, II.1)	n.a.	25	34	32	28	26	145
%F	n.a.	36%	68%	70%	54%	49%	40%
%M	n.a.	73%	73%	69%	62%	57%	53%

We have one large event for PG recruitment in October, where we invite students from TCD and other universities in Ireland to attend an information session. We ensure that such recruitment events have F role models and evaluate the recruitment impact annually. We will also include PG opportunities in our soft skills module taught to 3rd year students, so that students are aware of PG opportunities earlier in their career.

## Physics degree profile

We investigated the degree profiles of all undergraduates and found them to be comparable to national distributions (where available). In the 4th year we recognised a gender anomaly up to 2016 that was rectified in recent years.

### • UG student performance – 4th year

Figure 9, top, shows the number of students in the final year. Given fluctuations with low F numbers, we summed over 6 years of data to show the grade distribution of F and M students, within their respective cohorts. The 4th year grade profile across all Physics degrees for M and F is different with a scissors-type profile at upper grades until 2016 (top right). To understand this disparity, we investigated the mark breakdown of the two

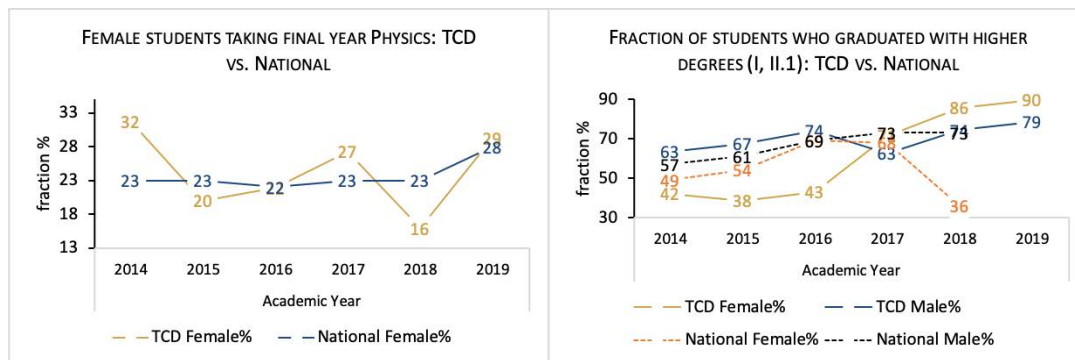


Figure 8: Left: Fraction of F taking final year Physics: TCD (ochre) vs national (blue). Right: Fraction of TCD F (ochre) and TCD M (blue), in F and M national cohorts, respectively, who graduated with a higher degree.

examinations that contribute the most (29% and 12.5%, respectively) to marks awarded in 4th year: (1) project examination and (2) the problem-solving paper.

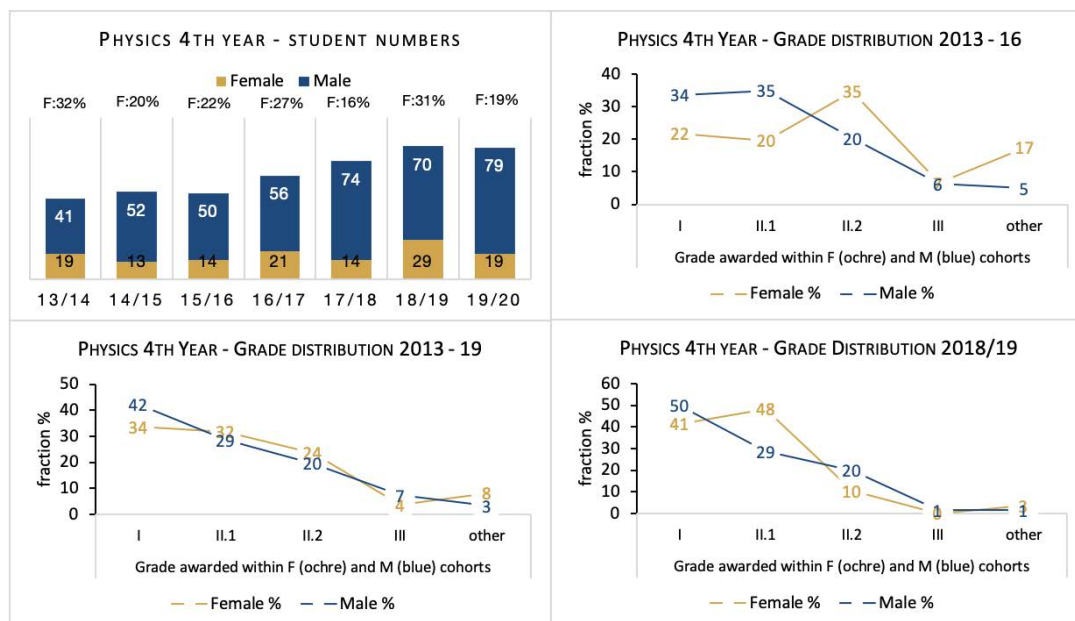


Figure 9: Top left: Student numbers in 4th year. F fractions are shown above each bar. Top right: Grade distribution summed over 2013/14 to 2015/16. Bottom left: Grade distribution summed over 2013/14 to 2018/19. Bottom right: The same for 2018/19.

(1) Figure 10, left, shows the fraction of F and M students with a first in their projects – student performance fluctuates over the years, with F performing better 57% in the past 4yrs than M at 52% (% fluctuations due to smaller F student number). The right panel of cumulative data over 7yrs shows no gender discrepancy.

(2) In 2016/17, we identified that females were underperforming in the problem-solving examination (green row, Table 3). The average mark, calculated over 12yrs of was 41%F versus 48%M.

Dawkins et al. 2017 (PRPER 13, 020117) showed that structured questions are more gender neutral, so in 2017-19, we changed the question structure of the problem-solving paper. The results of the 2017-19 examination can be seen in Table 3 (yellow rows). The gender

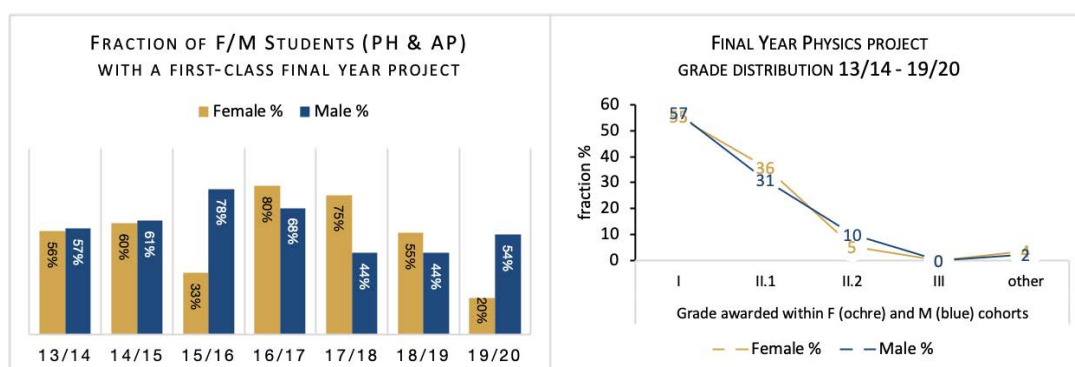


Figure 10: Left: Fraction of F and M cohorts with a first in the final year project. Right: Grade distribution of final year projects over 2013/14 to 2019/20.

difference disappeared in the years 17-19: average mark 54% (M) versus average 54% (F).

Table 3: Statistics of the problem-solving paper for the past 14 years.

	Number of students	Number of F students	Average Mark M (%)	Average Mark F (%)	Number of student fails M	Number of student fails F
2005/06	31	13	43	34	11	8
2006/07	41	12	40	29	17	11
2007/08	44	7	46	40	11	2
2008/09	41	9	66	67	2	1
2009/10	35	12	55	33	6	9
2010/11	34	10	48	43	11	5
2011/12	50	8	44	42	19	5
2012/13	46	9	43	34	20	8
2013/14	58	18	50	40	12	11
2014/15	45	6	55	36	7	4
2015/16	46	7	54	52	9	2
2016/17	60	15	37	41	31	10
2005/06-2016/17	531	126	48	41	156	76
2017/18	64	10	56	59	8	1
2018/19	76	23	52	49	9	3

Figure 9, bottom left, shows a more balanced student performance for 2013-20, where **the scissors distribution from 2013-16 is no longer dominating, top right**. The assessment changes of the problem-solving paper have likely contributed to F % surpassing M on average in the higher grades, bottom right.

#### • UG student performance – 3rd year

Figure 11, left, shows the number of students in 3rd-year Physics. In the right panel, we summed over all the years to show the grade distribution of F and M students, within their respective cohorts. The 3rd-year grade profile is similar for both genders.

#### • UG student performance – 1st and 2nd years

Figure 12 shows the number of students taking Physics modules in years 1,2. The fraction of F fluctuates from 18 to 30% over the period 2013-2020. The intake of F students in the last three years averaged at 27 % with the national average at 22%. Figure 13 investigates student performance in these modules from 2013 to 2019. There seems to be only small gender % differences in lower grades (II.2 and lower).

**Action 3.3** Monitor undergraduate performance and gender in earlier years to recognise trends e.g. changing exam styles if required (discussed for 4th year).

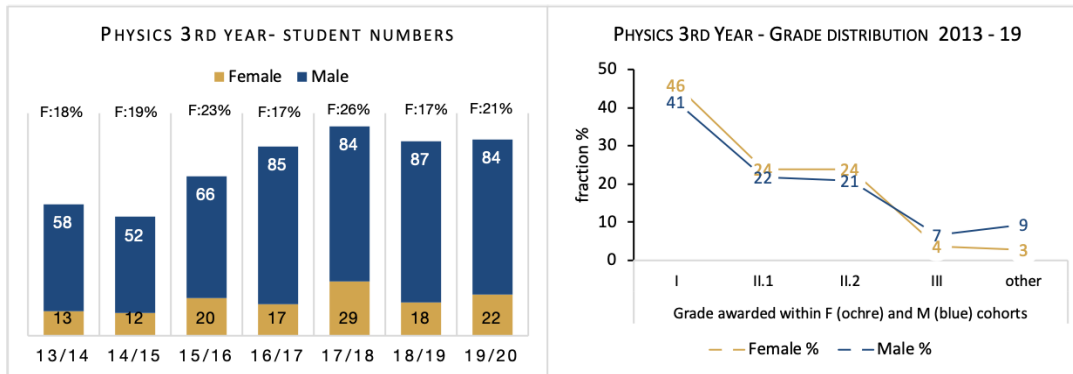


Figure 11: Left: student numbers in 3rd year. F% fractions are shown in each bar. Up to 2017/18 the numbers include students from interdisciplinary modules in conjunction with the School of Chemistry. Right: Grade distribution summed over 2013/14 to 2018/19.

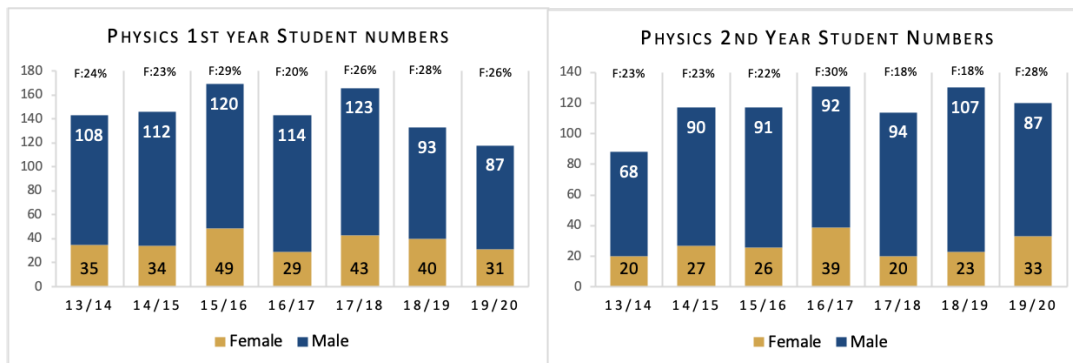


Figure 12: Student numbers taking Physics modules in first (right panel) and second (left panel) year. Since 2018 (TEP project) direct entry into Physics, before entry via a general Science moderatorship and choice after 2nd year F: ochre, M: blue. Female % above the bars.

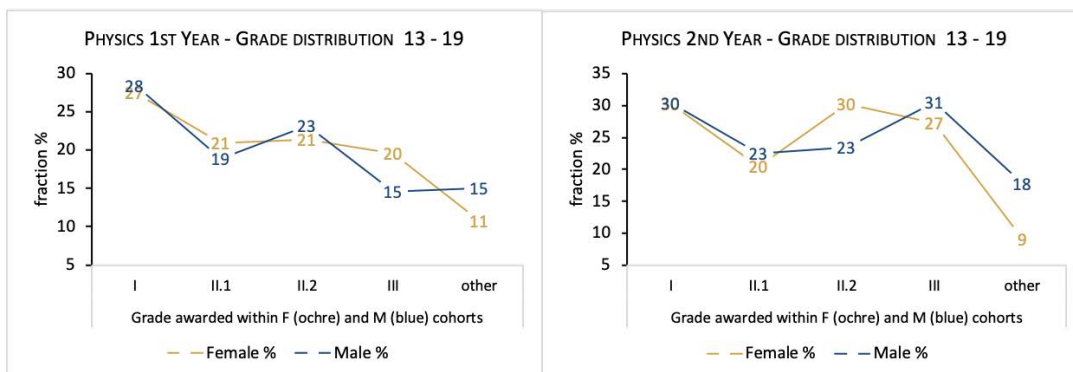


Figure 13: Grade distribution of students taking Physics modules in their first (left panel) and second (right panel) years (2013-19).

## UG student retention

Until 2017/18, students wishing to obtain degrees in Physics or Astrophysics entered via a general Science moderatorship, and enrolled in Physics modules in their first two years (see fig 12). Degree choice was made in year 3 (e.g. Physics, Biology, Geography etc). Individual entry for Physical sciences started in 2018/19 and is presented in 3.2 (v). Students in Theoretical Physics and Nanoscience options had separate entries.

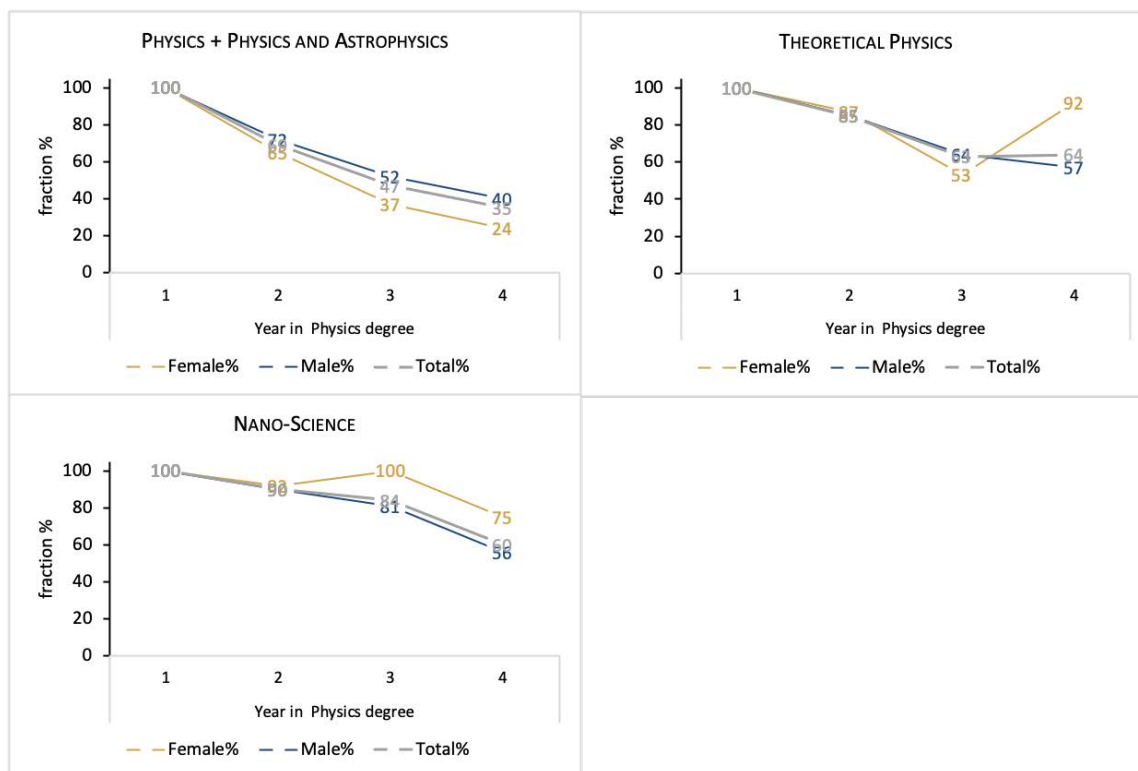


Figure 14: Fraction of student retention in F and M cohorts across all years in the physics degrees. Data are from 2013/14 – 2018/19 and the fractions are normalised to year 1, semester 1. Note: the y-axis is scaled accordingly to provide good visibility.

To investigate retention students are grouped according to their degree options: Science students taking Physics modules (which could lead to Physics or Astrophysics in 3rd year), Theoretical Physics and Nanoscience. Figure 14 shows retention curves summed over 6yrs. Retention in Theoretical Physics and Nanoscience is very similar in the M and F cohort. (transfer between degrees can cause values >100% and values to raise). In the Science entry, in our previous application, we reported a substantial drop from 1st to 2nd year (a drop to 78% for M and 57% for F). **This is no longer the case (top panel): retention curves are similar in the M and F cohort from 1st to 2nd year, 65–72%.** We have now more female lecturers in 1st year to provide students with female role models and the similar F/M retention curves could be a result of this. Future surveys will aim at identifying this aspect (Action 3.4).

A retention issue with females appears at the end of 2nd year, when Science students made their major degree choice. While no gender differences have been identified regarding performance (Figures 9,11,13), from 2nd to 3rd year, M dropped from 72% to 52% and F from 65% to 37%, indicating more females took other degree options in College. We will



perform in the upcoming year an in-class survey.

**Action 3.4** Conduct in-class survey of undergraduates to ascertain reasons behind lower retention from 2nd to 3rd year.

**3.2 (iii) Numbers of men and women on postgraduate taught degrees: full- and part-time**

N/A

**3.2 (iv) Numbers of men and women on postgraduate research degrees – full- and part-time**

*Also provide data on completion rate by gender.*

In the last 7yrs, the number of Physics postgraduates has ranged from 104 to 118 (Figure 15). Although the number of postgraduates has dropped in the 2016-19 (due to reduced funding in Ireland), **figure 15 shows that the percentage of registered F postgraduates has steadily increased from 15% to 26% during the last 7yrs.** Table 4 shows the current fraction of F Physics PhD students in a national context that is at 28% in 2019. **This is indicating a trend of gender awareness of the hiring PIs (see figure 16, also section 3.2 (vi)) and follows a previous action.**

**Action 3.5** Introduce formal process whereby all 3rd/4th year students are invited to talk from current PG (1F/1M) that report about their experiences, how/why to apply etc.

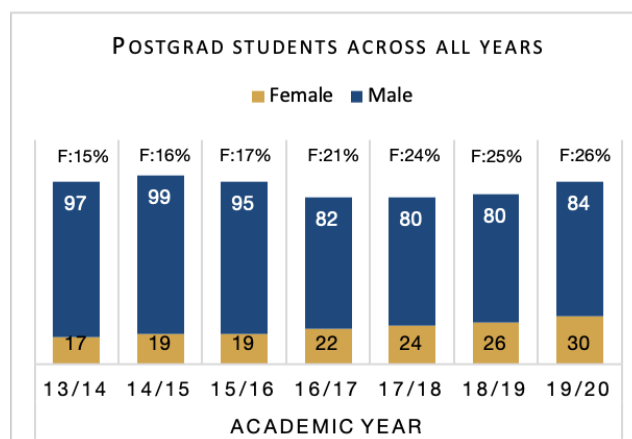


Figure 15: Postgrad student numbers in Physics across all years of study, from the period of 2013/14 to 2019/20 (M: blue, F: ochre).

Table 5 shows the number of PhD students graduating over the past 6yrs. The small number of F graduates in 2014 and 2015 was predicted in our last application (the drop coinciding with the economic downturn). This number might increase in the next period, due to the continuous increase in female participation over the past 6yrs (cf. Figure 15) but is depending on economic impact of COVID-19.

Table 4: Number of Physics PhDs students in TCD and nationally.

PhD students	National			TCD			
	2019	2018	2017	2020	2019	2018	2017
Total	214	251	278	114	106	104	104
Number of females	60	78	81	30	26	24	22
% Females	28%	31%	29%	26%	25%	23%	21%
Total part time	11	13	14	1	2	2	1
Number of females part-time	5	6	5	0	0	0	0
% part-time students who are female	45%	46%	36%	0%	0%	0%	0%

Table 5: Number of PhDs awarded by the School of Physics during 2014-2019.

Number of graduating PhD students	2019	2018	2017	2016	2015	2014	total
Total	30	29	23	29	16	17	144
Number of females	5	5	4	5	1	2	22
% of females	17%	17%	17%	17%	6%	12%	15%

### 3.2 (v) Intake of undergraduates by gender – full- and part-time

*Comment on any gender differences and how the department supports under-represented students.*

Undergraduate entry to Irish Universities is gender blind and is determined anonymously according to a national "points" system.

Since Sept 2018, we have direct entry to Physical Sciences, leading to degrees in Physics, Astrophysics or Nanoscience. Table 6 shows that 36% (2018) resp. 28% (2019) of our new 1st year students are F, with 26% (2018) resp. 23 % (2019) in Theoretical Physics. **With an average of 29% F, we have exceeded the target of 26% set in our previous application that started at 23% in 2014.**

Table 6: Intake of undergraduate by gender in our new Physical Sciences Entry.

Student Recruitment	19/20 Total	Female		18/19 Total	Female	
Physical Sciences	64	18	28%	73	26	36%
Theoretical Physics	44	10	23%	35	9	26%
Total	108	28	26%	108	35	32%

**Action 3.6** Monitor undergraduate recruitment in the new Physical Sciences and Theoretical Physics entry, target level above the Irish average established by HEA Ireland (footnote 1).

### 3.2 (vi) Ratio of course applications, offers and acceptances by gender for postgraduate research degrees in the School of Physics

*Comment on any differences between application and success rates.*

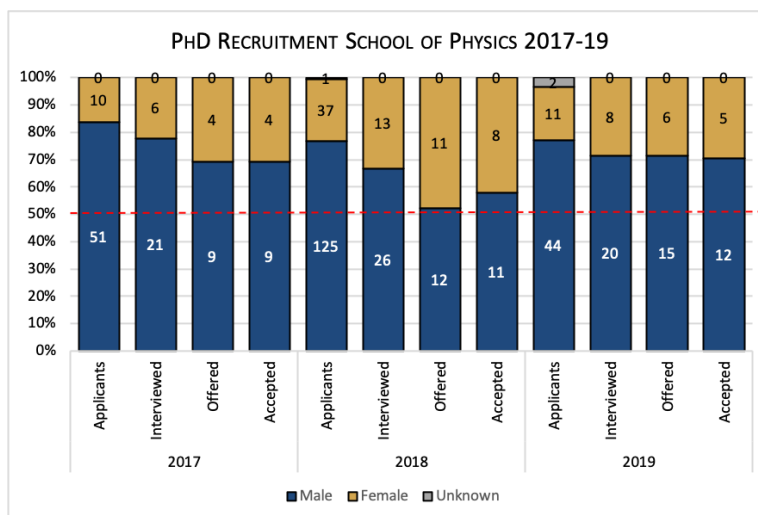
Since our last AS application, we started tracking applications to a common funding scheme, namely the IRC-funded "Government of Ireland Postgraduate scholarship". Many of our postgraduates are funded through this competitive national scheme. The scholarship is awarded to the student. Success rate varies over the years, depending both on the quality

of the applications and the available budget. Table 7 shows that the School has supported 11 to 18 applications every year. The success of applications over the 2014-2019 period averages 43% for all applicants and 49% for F applicants. An average 61% of the successful applications (offers) are accepted and 42% for the F cohort. Even though there are more IRC offers to F candidates, a lower amount of those offered are finally accepting the position.

*Table 7: Number of applications, offers and acceptances of the most common postgraduate scholarships that support PhD students in the school. The scheme is funded by the Irish Research Council.*

Government of Ireland Postgraduate Scholarship	2019	2018	2017	2016	2015	2014	2014-2019
number of applicants	11	11	16	13	18	14	83
number of F applicants	3	2	4	4	2	4	19
fraction of successful applicants (offers)	54%	36%	63%	38%	33%	36%	43%
fraction of successful F applicants	67%	50%	75%	75%	0%	25%	49%
fraction of accepted offers	83%	75%	40%	40%	67%	60%	61%
fraction of accepted offers F applicants	50%	0%	67%	33%	0%	100%	42%

We evaluated the hiring of postgraduates across the School, **independent of the funding source**, for the years 17-19, the data suggests that there is no bias in the recruitment process following application and **a greater proportional uptake of female postgraduates compared to the initial gender distribution** (see figure 16). From the pool of 24% F Physics students nation-wide (see table 2) a slightly higher ratio of ~30% F is recruited 2019 into Physics at Trinity.



*Figure 16: Fraction of F and M postgraduate students being recruited into the school of Physics with IRC independent funding sources (2017-19). The proportional uptake of female accepted postgraduate students is shifted towards a higher percentage, reaching a gender ratio of > 40% in 2017-19.*

**Action 3.7** Continuously capture postgraduate application data details from PIs for female postgraduate student numbers, and encourage them to address low % of female applicants.



### 3.3 Staff data

#### 3.3 (i) Proportion of all categories of academic staff by gender

*Look at the career pipeline and comment on and explain any differences between men and women. Where relevant, comment on the transition of technical staff to academic roles. Identify any issues in the pipeline at particular grades/levels.*

In Figure 17 the headcount of academics in the school (2015-2020) shows growth in numbers of assistant professors (above and below bar), but the numbers of associate and professor in/of remain nearly the same. Physics has never had a female 'Professor of' and currently there is one female 'Professor in'.

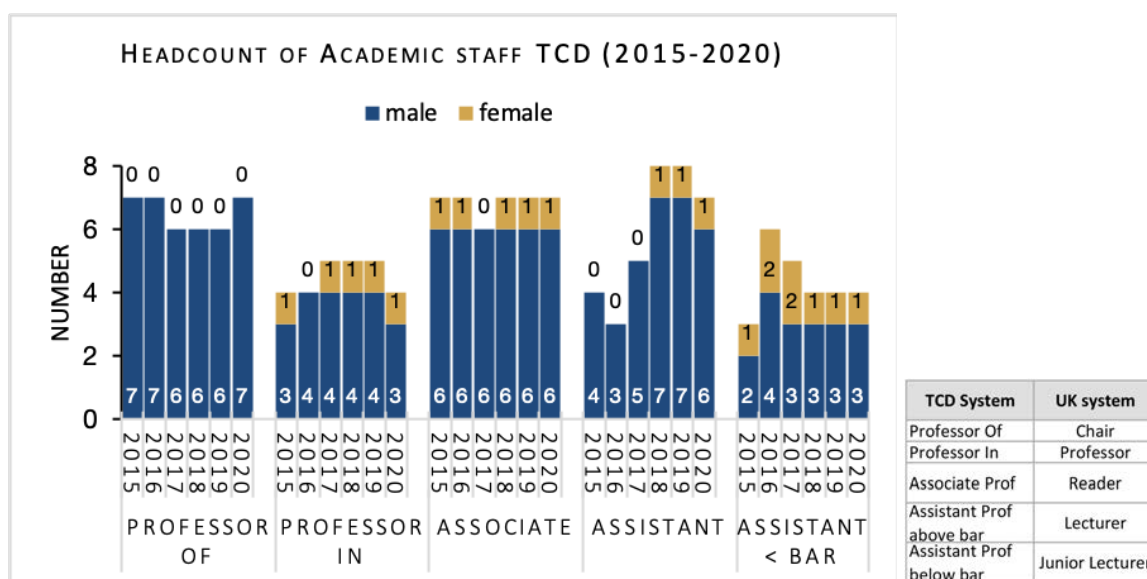


Figure 17: Headcount of academic staff (permanent and contract) evaluated annually in March, from 2015 to 2020. Equivalence to UK system is shown on the right.

Table 8 shows FTE of permanent and contract academic staff in the school as of March 2020, including for comparison the data presented in our last application (1st Oct 2014). Although it might seem that the FTE of female academic staff has not changed, 1.5 F Professors retired (1FTE) and transferred to another unit (0.5FTE). We hired 3 female Assistant professors, one female assistant professor was promoted to Associate Professor and 1 female Associate Professor was promoted to 'Professor in'. In April 2018, we hired 1 female Associate professor, but who left the school again after 10 months (promotion at previous external location) (not shown in table 8).

Recruitment of academic staff at Trinity over the last ten years was restricted due to the recession. When possible, retirements were refilled with junior positions. Over the past five years the School recruited substantially more female academics than in the previous century. Our academic hires in past 5 years were increasing gender balance (5F/14 total) above the national average. We recruited two family couples of academics (see table 11). Postdoctoral researchers are not included in table 8 since they are hired on an annual basis. Figure 18 compares the fraction of Permanent Physics academic staff in the school and nationally (no national data for academics on contracts exists). Trinity Physics almost

Table 8: FTE academic staff (March 2020, top) and at the time of our last application (bottom).

Permanent and Contract 1 March 2020	Professor of	Professor in	Associate Professor	Assistant Professor	Assistant below bar	Total
FTE academic permanent	7	4	7	5	1	24
FTE of females	0	1	1	1	0	3
% Females	0%	25%	14%	20%	0%	13%
FTE academic contract	0.5	0	0	2	3	5.5
FTE of females	0	0	0	0	1	1
% Females	0%	-	-	0%	33%	18%

Permanent and Contract 1 Oct 2014	Professor of	Professor in	Associate Professor	Assistant Professor	Assistant below bar	Total
FTE academic permanent	5.5	4.5	2	4	2	18
FTE of females	0	1.5	1	0	0	2.5
% Females	0%	33%	50%	0%	0%	14%
FTE academic contract	0.2	0	0	0	3	3.2
FTE of females	0	0	0	0	1	1
% Females	0%	-	-	-	33%	31%

matches the national gender profile at assistant to professor grades of permanent academic staff but falls below the F percentage at "professor of" grades.

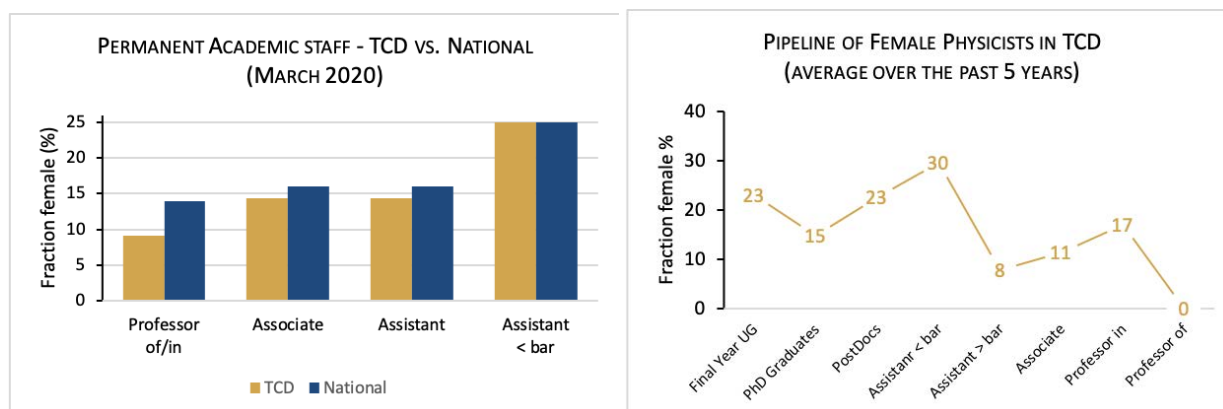


Figure 18: Left: Comparison of permanent Physics academics in the school and nationally. , Right: Pipeline of F physicists in TCD (contract and permanent). Data averaged over 4 – 5yrs.

Contract academics (5.5FTE in 2020) represent 19% of the total, and most (5 FTE) are Assistant Professors, with 20% of these being female.

Figure 18 shows the female pipeline from final year undergraduate to "Professor of". Pipeline issues begin at Assistant Professor level. Below that, F fractions remain around 23%.

The increase at Assistant Professor below bar (at 30%), is due to small number statistics. Female numbers are critical at every level after that, with very small numbers of female academic staff. By recruiting 2 couples of academics in the last 5 years the school is slowly improving female numbers.

In figure 19 we notice a striking difference in career perception of the postdocs and post-graduates. The female postdocs aspire to an academic career whereas the female PhD students have a more differentiated view.

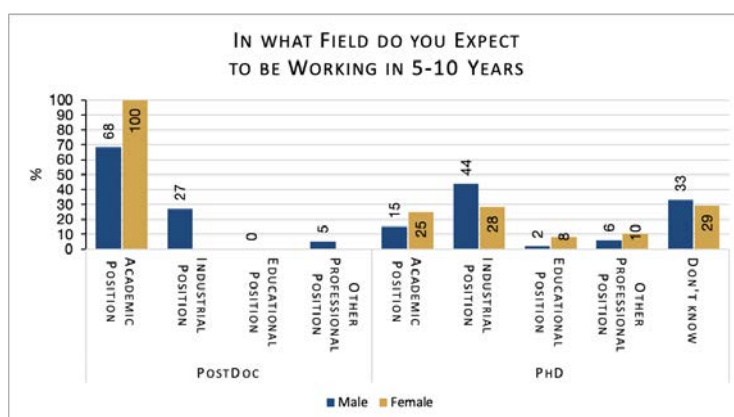


Figure 19: Career perception of Postdocs and PhD students.

### 3.3 (ii) Leavers by grade and gender

*Comment on the reasons staff leave the department.*

Our exit surveys (Table 9) show the most common reason for research staff leavers was contract ending, followed by a new position (career advancement). Most academic leavers (2M/3 total) are due to retirement. No data suggests gender discrepancies in relation to reasons for leaving.

The postgraduate students are confirmed in their degree after 18 months into the project. We observe a completion rate of almost 100% of confirmed students in both genders in the final year.

Table 9: Summary of our exit survey: leavers from 2015 to 2019.

Year	F	M	Staff Type	Reason for Leaving
2019	3	11	Research	End of contract and new position elsewhere
	1	0	Academic	Promotion at former location (moved back to USA after 10 months)
	3	0	Admin	New position elsewhere (F)
	0	0	Technical	
2018	2	12	Research	End of contract and new position elsewhere
	0	0	Academic	
	1	0	Admin	Returned to full-time education (F)
	0	0	Technical	
2017	1	11	Research	End of contract and new position elsewhere (F)
	0	0	Academic	
	1	0	Admin	New position (higher grade) in TCD
	0	0	Technical	
2016	5	11	Research	End of contract and new position elsewhere
	0	2	Academic	End of (temporary) contract, secured other position in TCD (M); Retirement (M)
	1	0	Admin	Returned to full-time education (F)
	0	0	Technical	
2015	1	21	Research	End of contract and new position elsewhere (F)
	1	0	Academic	Early retirement (F)
	2	0	Admin	Resigned, family reasons (F); Resigned moved abroad (F)
	1	0	Technical	50% secondment to other department in TCD (F)

**Action 3.8** Monitor leavers data.

### 3.3 (iii) Proportion of men and women academic and research staff on fixed-term, open-ended, zero-hour and permanent contracts

*Comment on what is being done to ensure continuity of employment and address any other issues. Where relevant, comment on any academic staff employed on a casual or adjunct basis.*

There are no zero-hour contracts. Academics employed to deliver a specialist course are usually employees of another institution. Table 8 and table 10 show distributions at the various levels.

We also investigated the hiring of postdoctoral researchers and observed that Trinity employed 54% (57.4/106.4) in 2018 of the total number of Physics postdoctoral researchers in Ireland and 58% (14/24) of the F postdocs in Ireland. The number/percentage of F postdoctoral researchers increased slightly in the past 2yrs, and the number of total postdocs (around 57) remained stable (Table 10). The fraction of F postdocs in Physics is above national values (green cells) and in line with the average fraction of Physics PhD graduates (17%) in Trinity. See also postdoc hiring over the last three years in fig 20.

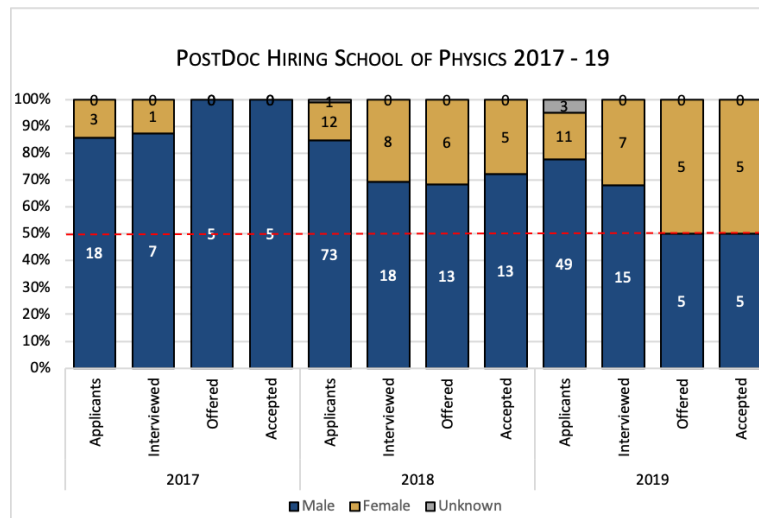


Figure 20: Fraction of F and M postdoctoral researchers being recruited into the school of Physics (2017-19) reaching a gender ratio of 50% in 2019.

Table 10: Number of non-academics Physics FTE. National percentages shown in green.

		2019		2018		2017
Postdoc	Total	56		57.4		58
	Number of F	15		14		10
	% Females: TCD vs National	27%	23%	24%	23%	17%
Other Research	Total	3.0		7.6		12.8
	Number of F	1.0		0.6		0.8
	% Females: TCD vs National	33%	9%	8%	7%	6%
Technical	Total	12.0		12.0		8.5
	Number of F	2.0		1.8		1.5
	% Females: TCD vs National	17%	15%	15%	16%	18%
Admin	Total	11.5		15		13
	Number of F	9		11		8
	% Females: TCD vs National	78%	84%	73%	84%	64%

Word count: 2441

## 4 Supporting and advancing women's careers: recommended 5000 words

*For each of the following sections (4.1, 4.2, 4.3 and 4.4):*

- *Provide data/statistics (numbers and percentages) for at least the past three years, with commentary on their significance. Where possible and relevant, use clearly-labelled graphical illustrations.*
- *Reflect upon the key issues in the department, what steps have been taken and what support has been given to address any gender disparity.*
- *Describe the initiatives implemented to address any issues and any impact to date.*
- *Comment upon any plans for the future, including how any gaps in the data will be addressed, and refer to specific, numbered actions that appear in the Action Plan.*
- *Provide data obtained via consultation where possible.*
- *Where the number of women in the department is small, applicants may wish to comment on specific examples.*

### 4.1 Key career transition points

#### 4.1 (i) Recruitment

*Comment on job application, short-listing, offer and acceptance rates by gender and grade. Comment on how the department's recruitment processes ensure that women are encouraged to apply. Additionally, please comment on how the department's processes and criteria for short-listing and selection comply with, and build upon, the institution's policies for equality and diversity, and recruitment and selection. If the dataset is large, please break it down into the different disciplines or units.*

Our School Administrator, with the university HR, ensures that the recruitment process for academic, technical and administrative staff is in compliance with equality and diversity policies. These policies relate to documentation on the job, its specification (advertising, selection criteria, interview scheduling and record keeping), and selection committees (gender balance and the appointment of external assessors). This ensures equity and fairness in all our selection processes. The Trinity Equality Policy is notified to all candidates and to promotion and selection committees, who are required to undertake the LEAD (Living Equality and Diversity) Programme. HR ensures that recruitment competition files retain the requisite information to ensure compliance with these policies. At present, however, the recruitment of research staff is devolved to PIs without central HR support (see more below).

**At the postdoctoral level, we are observing a trend towards a gender balanced hiring as indicated in figure 20 . Also, at the assistant professor level, our academic hires in past six years were above national gender ratio.**

**Our job ads display both the Trinity and our School equal opportunity policies (please see <https://www.tcd.ie/Physics/about/women-in-physics/about/>), along with the Athena SWAN Bronze and Institute of Physics Juno logos.**

#### • Academic recruitment

From 2014 to 2020, there have been 14 academic appointments (5F; 9M), all at the Assistant or Associate Professor level (Table 11). Five of these positions did not involve open competition,

as they were either temporary contracts (e.g., buy-out) or part of special Trinity hiring schemes (e.g. attract talents). They had a 40% female ratio. For the remaining positions with open competition, the percentage of F who applied were in general very low (below 22%). However, in the last three years a higher % of women have been interviewed than have applied, suggesting that, while the numbers are small, there is not currently a bias in the shortlisting stage.

Table 11: Recruitment of academics from 2014 to 2020 in Physics.

Year offer	Position	Applicants		Interviewed		Offered		Accepted		Note	Panel Gender breakdown		
		Total	F	Total	F	Total	F	Total	F		Total	F	%F
2014	Assist Prof 1yr	1	1 100%	1	1 -	1	1	1	1	Direct nomination	-	-	-
2015	Assist Prof	1	0 0%	1	0 -	1	0	1	0	Direct nomination	-	-	-
	2 x Assist Prof	42	7 17%	7	1 14%	2	1	2	1	Dual-career hires	6	2	33%
2016	Assist Prof	23	3 13%	4	0 0%	2	0	0	0		6	2	33%
	Assist Prof	33	6 18%	4	0 0%	1	0	1	0		7	2	29%
	Assist Prof	23	4 17%	4	0 0%	1	0	1	0		6	3	50%
	Assist Prof	11	5 45%	4	3 75%	1	1	1	1	Walton Club (outreach)	5	2	40%
2017	Assist Prof	1	0 0%	1	0 -	1	0	1	0	No competition ERC	-	-	-
	Assist Prof	18	4 22%	5	2 40%	1	0	1	0		6	2	33%
2018	Associate Prof	1	1 100%	1	1 100%	1	1	1	1	No competition SFI	-	-	-
	Assist Prof	1	0 0%	1	0 0%	1	0	1	0	No competition ERC	-	-	-
2019	Assist Prof	15	3 20%	6	2 33%	1	0	1	0		5	2	40%
	2 x Assist Prof	45	6 13%	7	2 29%	2	1	2	1	Dual-career hires	6	2	33%
<b>total</b>		<b>215</b>	<b>40 19%</b>	<b>46</b>	<b># 26%</b>	<b>16</b>	<b>5</b>	<b>14</b>	<b>5</b>	<b>36%</b>	<b>36</b>	<b>13</b>	<b>36%</b>

We had two recruitments in which 4 Assistant Professor positions were advertised. The positions were offered to two dual-career couples. TCD Physics recognises that assisting dual career couples is key to advancing women in academia. Although we have no formal policy on this, during the last year the second two dual-career hiring was completed. We clearly need to encourage our academics to be proactive using their networks to encourage a strong field of women as well as men to apply.

**Action 4.1** Encourage our academics to be proactive using their networks to encourage a strong field of women applicants and ensure a minimum of one candidate of each gender in interview shortlists.

#### • Research staff recruitment

The recruitment of research staff is devolved to PIs without central HR support. This accelerates the process of appointment.

Figure 16 and 20 indicate that the process is becoming gender balanced. A higher proportion of F PhD and postdoctoral students was hired in the last three years than the initial applying percentage of female candidates.

**Action 4.2** Continue monitoring recruitment procedures for research staff and encourage PIs to explicitly indicate female hiring (according AS and TCD guidelines).

#### • Professional and support staff recruitment

From 2014 to 2019, we recruited 11 non-academic staffs, 9 of whom were female (Table 12). The recruitments were predominantly administrative with a predominantly female applicant pool.



Table 12: Recruitment of non-academics from 2014 to 2018 in Physics.

Year offer	Position	Applicants		Interviewed		Offered		Accepted		Panel Gender breakdown		
		Total	F	Total	F	Total	F	Total	F	Total	F	%F
2014	Admin	10	6	60%	4	3	75%	1	1	1	1	-
	Admin	5	4	80%	2	2	100%	1	1	1	1	-
	Admin	10	10	100%	5	5	100%	1	1	1	1	-
	Support	1	1	100%	1	1	100%	1	1	0	0	-
	Support	30	18	60%	5	3	60%	1	0	1	0	-
2015	2 x Admin	4	3	75%	4	3	75%	2	2	2	2	33%
2016	Admin	78	57	73%	5	4	80%	1	1	1	1	67%
	Admin	5	5	100%	3	3	100%	1	1	0	0	67%
	Admin	5	3	60%	4	2	50%	0	0	0	0	67%
	Admin	8	8	100%	3	3	100%	1	1	1	1	33%
	Technical	6	4	67%	4	3	75%	1	1	1	1	33%
	Admin	1	1	100%	1	1	100%	1	1	1	1	67%
2017	Admin	30	19	63%	7	5	71%	1	0	1	0	67%
2018	Admin	1	1	100%	1	1	100%	1	1	1	1	67%
2019	Admin	16	14	88%	3	3	100%	2	2	2	2	67%
	Technical	6	1	17%	4	1	25%	1	0	1	0	33%
total		216	155	72%	56	43	77%	17	14	15	12	55%

#### 4.1 (ii) Induction

*Describe the support provided to new staff at all levels.*

School-specific orientation handbooks are provided to both students and staff on their arrival. Students receive their handbooks at the start of the academic year and staff should receive theirs at the time their contracts are issued. Consultation with new staff in the survey has revealed that, staff that have received the handbook prior to their start found that useful (Figure 21; 52% M, 75% F). To homogenise this, the school will revise our way to communicate with new staff prior to, or at the latest, at their arrival in Trinity.

**Action 4.3** Ensure induction handbooks are sent to every new staff and include Athena SWAN information in UG and PG student handbooks, staff handbook.

New academics are assigned a mentor within Physics who meets with new staff on a regular basis. An action is to ensure that this is more widely advertised to new academics and that, once they have been enrolled in the mentorship scheme, gather data on their usefulness. Female staff who have enrolled in Aurora training are assigned a mentor, not necessarily from Physics. Currently, research staff do not have an assigned mentor and this is a subject for a new action.

At the beginning of their jobs the HoS meets with the new staff and our administrative officer provides a one-to-one induction to new academics. This involves introduction to key personnel in the school and also to our morning coffee breaks (see below). Additionally, HR run a Trinity induction day for new staff including introduction policies on Dignity at Work and Health and Safety policies.

#### Social gatherings/First Thursday Coffee

All academic, administrative and technical staff have a 30-minute coffee break every morning. The morning coffee has been critical to the collegiality within the school and the interaction between academic, technical and administrative staff.

To promote the inclusion of Research staff in the School we have initiated a "First Thursday" coffee morning (the first Thursday of every month) that research staff and their supervisors

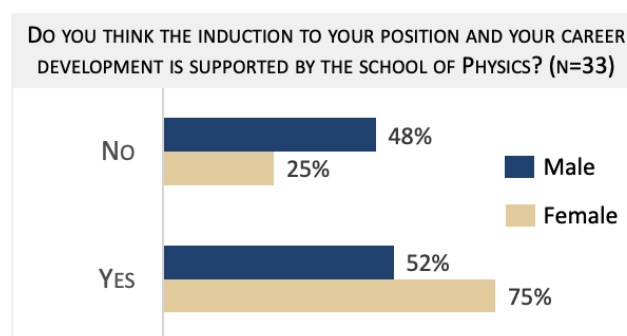


Figure 21: Perception of F and M academics and postdoctoral researchers on their induction into the school (Survey 2019/20).

are particularly encouraged to attend. Our invitation email asks Physics staff to invite a female researcher so that our own Physics female researchers can network with a broader pool of female researchers and staff. Such female researchers may be from their own group, a collaborator or academic in another school.

**These events are very successful in getting a critical number of women together in one space once a month. Female researchers have commented that it helps reduce the potential isolation of being in the minority in any research group.**

#### 4.1 (iii) Personal Development Review

*Describe any schemes (formal or informal) which are currently in place for staff at all levels, including postdoctoral researchers, to discuss, support and encourage their career progression. Where possible, comment on any consideration of promotion and work-life balance during the review. If available, provide details about the frequency and take-up of these schemes. Comment about any training provided for staff carrying out reviews and staff feedback about the review process.*

New Assistant Professors are invited to take part in a Development Programme to support their role in their first 5 years in TCD. During this period, the new academic receives regular feedback from our HoS and are assigned an experienced mentor. Assistant Professors are required to participate in the probation and performance review process. The first year is probationary, and in years 2 to 5, all Assistant Professors are assessed in the areas of teaching, research and contribution/scholarly activity based on performance, against an agreed set of goals and objectives set by our HoS, and agreed with the staff member each year.

There are general opportunities for personal development for all academic grades at Trinity level. Although not all staff would like to participate in a personal development scheme, at School level, this can be introduced on a demand-led basis. At the postdoctoral level, personal development is discussed individually twice during the probation appraisals in the first year.

**Action 4.4** Evaluate demand of personal development to other academic grades and Mentorship to new research staff in next survey.



#### 4.1 (iv) Promotion

*Provide data on staff applying for promotion, and comment on applications and success rates by gender and grade. If possible, comment on any evidence of a gender pay gap in promotions at any grade. Provide details on the promotions process, including how candidates are identified, and how the process and criteria are communicated to staff. Comment on the criteria for promotion, including detail about how career breaks are taken into account. Comment also on if and how the full range of work-related activities (including administrative, pastoral and outreach work) are taken into consideration. Provide details of any training or mentoring offered to become eligible for or improve success at promotion, both in advance of an application and with regards to staff who have been unsuccessful. Where possible, comment on the perceptions staff hold of the promotions process.*

**Promotion decisions are at University level. Due to the severe economic downturn over 10yrs ago, strict promotion quotas have been set by the Board of the university and there is now a long backlog of potential applicants seeking promotion. Promotions have thus been a very competitive process, and staff have reported dissatisfaction.** Promotions outcomes are communicated to Physics staff via the Faculty Dean/Vice Provost and HR representatives.

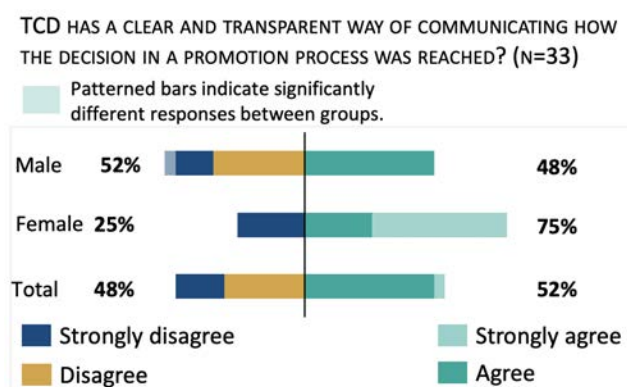


Figure 22: Perception of F and M academics on their promotion communication by the university.

Our HoS encourages and supports staff applying for promotion, endorses academic applications and writes references for academics. For this reason, our HoS normally does not sit on promotions committees. Informally, academics applying for promotion consult with more experienced academics, who offer help in preparing paperwork.

Academic promotions are managed by two committees: the Senior and the Junior Academic Promotions Committees of Trinity. The latter deals principally with Assistant Professor progression across the merit bar and accelerated progression. For senior academic promotions (to Associate Professor, Professor In and Professor Of), HR notifies all academics once a call is approved by Board, and a dedicated webpage publishes details of the timeline, procedures, criteria, scoring methodologies (Table 13), committee membership (approved by Board) and guidance on the application process for candidates. In the survey we included questions regarding promotion within Trinity. The respondents were particularly forthcoming in the qualitative questions around career aspirations and career progression. Those who were dissatisfied with both the number of higher grade positions available, and the process for attaining those posts, were the most vocal (Figure 22). A few representative comment are quoted here: " Trinity seems to be extremely difficult to get a promotion, &

other universities would have much higher levels of associate/full professors”, “ We are stuck at the current grade due to very limited promotion carried out in Trinity”, “I haven’t applied for promotion, but I would like to see much clearer guidelines/criteria.” The percent of applications per gender group was at ca. 70% and the success rate overall at approx. 30%, no gender imbalance was observed.

Table 13: Criteria for promotion in TCD and their relative weights.

Grade	Research	Teaching	Service to College	Service to Discipline/Community
Confirmation in appointment	45%	45%	5%	5%
Assistant Professor Merit bar	40%	40%	10%	10%
Associate Professor	45%	25%	15%	15%
Professor in	45%	25%	15%	15%
Professor of	50%	25%	10%	15%

In the last 4yrs, 7 Physics academics have been promoted (Table 14), with a total pool of 23 applications (success rate: 30%). **Of those, 4/23 applications were from female academics; of the two females that were eligible, two were successful.**

**At support staff level, promotions have been suspended at university level since 2019.** Representative survey comments are quoted here: "There is no promotion/progression schedule for support staff, the calls should be an annual or a bi-annual rota, which would give people something to aim for. The situation at the moment is demoralising when you don’t know when you can apply for a promotion."

Table 14: Promotion of Physics senior academics from 2016 to 2019 (4 years of data)

Promotion Sought (2016-2019)	Total F Appl.	Total M Appl.	Total All Appl.	Successful Female		Successful Male		Success all	
Professor In to Professor Of	0	5	5	-	-	1	20%	1	20%
Associate to Professor In	3	7	10	1	33%	1	14%	2	20%
Assistant>bar to Associate	1	7	8	1	100%	3	43%	4	50%
Total Senior Promotions	4	19	23	2	50%	5	26%	7	30%

**Action 4.5** Encourage all academic staff to apply for promotion and lobby within university SAT to change situation for support staff.

#### 4.1 (v) Selection committees

*Provide details of how selection committees for recruitment, promotion and retention are formed. Comment on how gender balance is taken into consideration. Comment on how the issue of ‘committee overload’ is addressed where there are small numbers of women.*

**Selection panels in Physics are gender balanced** (the average over 2014-2019 is 45% F, right columns, Tables 11 and 12). We ensure that at least 1/3 of the panel comes from one gender. For academic recruitments, the Dean nominates a Selection Committee, which normally follows the input provided by the School. The committee comprises the most suitable and qualified people to assess applicants in the discipline and the role being fulfilled. HR

representatives assist in carrying out their function. Where there are small numbers of women, the females on the Committee do not necessarily have to come from our School and may come from another University which ensures Physics academics are not over-burdened.

## 4.2 Career Development

### 4.2 (i) Support given to students (at any level) for academic career progression

*Comment and reflect on support given to students at any level to enable them to make informed decisions about their career (including the transition to a sustainable academic career).*

Our 3rd year undergraduates take a communications skills course. While this includes the effective communication of scientific results, it also focuses on the writing of CVs and job-seeking skill sets. Additionally, the School also hosts Alumni-to-student networking events for 3rd year students. We seek Alumni speakers to demonstrate the broad range of jobs of our past Physics students. Table 15 shows the gender breakdown of speakers in these events. The reduced number of F speakers in 2017 was caused by a number of last-minute cancellations from F speakers due to family responsibilities. To avoid this, **we purposely increased the fraction of invited F Alumni in 2018. As a result, we had excellent gender balance among our speakers in 2018-19.** The percentage of F students who attended the events follows that of our student population.

*Table 15: Networking events between Physics alumni and 3rd year students hosted by Physics. We actively contact a gender-balance pool of speakers, to ensure that this is reflected in the gender of the speakers.*

Year of Event	Number of Contacted Alumni	F: number and fraction		Number of Alumni speakers	F: number and fraction		Number of students	F: number and fraction	
2019	26	15	58%	11	7	64%	34	8	24%
2018	36	20	56%	14	8	57%	34	9	26%
2017	68	25	37%	29	8	28%	76	12	16%
2016	73	22	30%	30	12	40%	89	19	21%
2015	63	25	40%	32	12	38%	60	16	27%

The TCD Career Services supports undergraduate and postgraduate students to make informed decisions about careers and provide workshops to postgraduates. Physics Open Days (Figure 23) are aimed separately at prospective UG students to assist them and their families in making informed choices. Our demonstrators in Physics Open Days are from our own population of UG and PG students. **We always ensure a balanced 50:50 gender mix amongst demonstrators at the events (Figure 23), so that prospective female students can also identify with Physics as a career.** Although the school has encouraged a higher number of F academics to speak and attend these events, the small number of F academics implies that it is challenging to obtain gender balance of speakers. **We have encouraged more F postdocs to speak in our Open Days and participate in outreach events as speakers, the gender is now balanced.**

**Action 4.6** Continue to include postdocs in outreach and staff involvement, to raise female perception and %.



*Figure 23: Physics open day 2018 – we ensure gender balance in our group of demonstrators (Top left). Top Right: prospective students and their families in our information sessions. School of Physics Open Day 2019 – Academic staff and 3rd year undergraduate volunteers in outreach to prospective students (bottom).*

The final year project mentoring is a major element of our degrees and is a great opportunity for undergraduates to network with researchers and academic staff with a significant block of time spent in a research group. The Summer Undergraduate Research Experience (SURE) programme is another route for our undergraduates to do research in Physics and opens up their view of a possible academic career. Due to finance restrictions, the SURE programme was interrupted for a few years, and resumed in the summer of 2018. Students are allocated summer research scholarships based on their academic performance. There was no improvement after gender-blinding the submissions, due to the in-built grade disparity. In 2019 there were 0/5 awarded females from 5/29 applicants. This year the director has been authorised to favor female applications in 2021 to ensure diversity of the students awarded (2020 program cancelled).

**Action 4.7** Collect gender-disaggregated data in SURE programme and raise female success rate.

TCD has a noteworthy university pastoral tutor system. Each undergraduate is assigned a Trinity Tutor on entering University. Tutors are a source of support at any time during a student's time in Trinity. They provide confidential help and advice on personal as well as academic issues and are a valuable resource for students in relation to issues including careers.

As part of our AS initiatives the School has supported a delegation of about 10 F undergraduates to attend the Conference for Undergraduate Women in Physics (CUWiP) in Oxford, since 2015. This series of conferences has become more and more popular amongst our students (Figure 24, left).



*"We were inspired in our academic pursuits by such wonderful evidence of the principles we are currently studying, or hoping to study into the future."*

TCD Physics undergraduate about CUWiP

*"We left feeling excited and renewed in our love of physics."*

TCD Physics undergraduate about CUWiP



Figure 24: Left: TCD Physics has supported up to 10 F undergraduates/yr to attend the Conference for Undergraduate Women in Physics in Oxford since 2015. Above, a group of TCD students in CUWiP/2016. Right: Pizza night networking events for UG and PG students, postdocs and academics (Nov 2018).

The school also hosts one to two 'pizza nights' per year inviting female students (UG and PG), research and academic staffs. These networking events allow our students to see academic career progression (Figure 24, right).

#### 4.2 (ii) Support given to postdoctoral researchers for academic career progression

*Comment and reflect on support given to postdoctoral researchers to assist in their career progression.*

Postdocs are mainly supported through PIs and by initiatives from the Trinity Research and Innovation centre in organising seminars, workshops and in identifying funding and job opportunities. Negotiations are underway between the TCGEL and the Dean of Research to setup a dedicated Postdoc Centre in the University, modelled on the successful one at Imperial College London.

At University level, HR hold Induction Days for new Trinity staff. This day provides a fast track for integration and knowledge on services and key personnel in the University. It also provides an opportunity to build a network across Trinity at an early stage.

At the departmental level, new academic staff are given a check-list with the steps and courses to take, among them scientific, health&safety inductions and encouragement to join the coffee mornings. See also postdocs response in figure 21

Physics organises funding information events annually in May, to encourage postdocs to apply for a range of individual funding schemes (e.g. Marie Curie actions, ERC Grants). These events are held in conjunction with the School of Chemistry. There are usually about 20 attendees per event, 10 of which from Physics.

**Action 4.8** Increase postdoc integration by including them into School outreach etc.

#### 4.2 (iii) Training

*Describe the training available to staff at all levels in the department, including any equality and diversity training, leadership training, or other training opportunities related to career progression. Provide details of uptake and how existing staff are kept up-to-date with training.*

**Following on the recommendation outlined in our last application, face-to-face unconscious bias training has been given to members of the SAT.** In the next unconscious bias sessions, we will extend the invitation to other members of staff.

All our postgrads enrol in a 'Teaching and Learning' course and are demonstrators in our undergraduate labs. Following one of the actions on our previous application, **our postgrad students now also take part in face-to-face unconscious bias training.** At the end of the course, students receive a certificate describing their teaching activities, which they can then include in future job applications.

**Action 4.9** Face-to-face unconscious bias training of UG lab demonstrators and other staff.

Trinity pays for about a dozen academics to attend Aurora leadership training every year. **TCD Physics has supported our F academics and support staff to participate in this training,** by allowing them to be absent from work on training days (5 in total) and facilitating rescheduling of their duties (e.g. lectures) when in training. There is a network of Aurora alumni in TCD. They organise meetings and events, that Physics has hosted (Figure 25).

Health and safety training is available and mandatory for all staff and students.

**75% of the female and 52% of the male postdocs recommended the trainings offered by the school.**



Figure 25: Aurora networking event supported by TCD Physics in 2017: Marie Kinsella (Administrative officer in Finance/Physics) and the speaker at the event, Deirdre Somers (Chief Executive, Irish Stock Exchange).



## 4.3 Flexible working and managing career breaks

### 4.3 (i) Cover and support for maternity and adoption leave

*Explain what the department does (beyond the institutional maternity policy package) to support staff before they go on maternity leave. Discuss arrangements for covering work during absence, arrangements to enable staff to keep in touch during absence, and how staff are supported on their return. Comment on any differences in maternity leave provision for staff on fixed-term contracts.*

In addition to the institutional maternity/adoption policy package, FEMS introduced a scheme in 2015 in which academics returning from maternity/adoption leaves can avail of teaching buyout for one Semester. This enables returning staff to get their research career back on track. Since the beginning of the scheme, no academic in Physics has been on maternity/adoption leaves.

In Physics, three administrative staff returning from maternity leave have been granted parental leave on a one day a week basis (thus, working a 4-day week, Table 17). Physics staff on leave are encouraged to keep in touch via staff coffee or First Thursday events or simply by dropping in.

Due to small number statistics the maternity and paternity leave information is sparse, but figure 26 demonstrates that the school of Physics is continuously providing support.

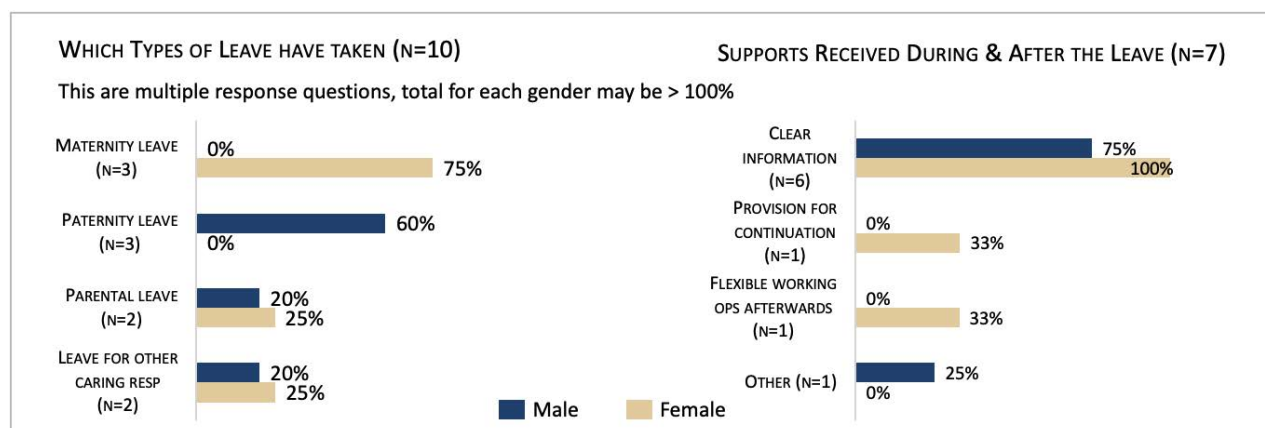


Figure 26: Maternity - and paternity leave response of the AS survey within the school

**Action 4.10** Monitor returner's leave and support paternity leave for research staff, HoS writing to staff annually that school supports flexible working.

### 4.3 (ii) Maternity return rate

*Provide data and comment on the maternity return rate in the department and, where possible, the proportion of staff remaining in post 6 and 12 months after return.*

We have seen 100% return rate from maternity leave, as shown in Table 16. Trinity HR deletes maternity information after conclusion, so we had to collect this information within the school.

Table 16: Maternity leaves and returning rate from 2015-2019.

Maternity leave (2015-2019)	Number taking maternity leave	Number returning maternity leave	Number remaining in post after 6 months
Academic staff	0	-	-
Technical/Admin staff	2	1/on-going	1
Research staff	2	1/on-going	1
Total	4	2 + 1 on-going	2

#### 4.3 (iii) Paternity, adoption and parental leave uptake

*Comment on the uptake of paternity leave, adoption leave and parental leave by gender and grade. Discuss whether the rates of uptake for this leave have changed. Provide details on the department's paternity package and arrangements.*

Mothers have the same right under adoptive leave as for maternity leave. Since 2016, fathers are now entitled to 10 working days statutory Paternity Leave. Fathers who wish to avail complete an application form and submit it to the HoS for approval. Both parents have a right to take unpaid parental leave of up to 18 weeks per child (up to the age of 8 years).

Table 17 shows that 100% of requests for leave in Physics have been granted. We do not have information on paternity leaves taken by research staff, as this is dealt directly with PIs. Research staff have the same rights to take 10 working days statutory Paternity Leave. General perception on leave across school staff see figure 26

Table 17: Paternity and Parental leaves in Physics from 2015-2019.

Leave type (2015-2019)	Leave applications & gender	Leave granted & gender	Staff category
Paternity	1 M	1 M	academic
Paternity	2 M	2 M	technical
Parental	3 F	3 F	admin

#### 4.3 (iv) Flexible working

*Comment on whether there is a formal or informal system for flexible working in place. Provide data on application and success rates by gender and grade, commenting on any disparities. Give details of the support and training provided for managers in promoting and managing flexible working arrangements, and of how the department raises awareness of the options available.*

Trinity and the school operate both formal and informal systems of flexible working. Academic staff do not have prescribed contractual working hours. These provide the context for agreement between academic staff and the HoS on optimal balance of flexibility and accountability for all academic staff.

For administrative and support staff, there is a flexitime scheme which provides for core working hours with flexible attendance patterns outside core hours. Additionally, for all staff, Trinity also operates a Shorter Working Year scheme and reduced working hours arrangements. HR communicates the scheme by email to staff on an annual basis.

The HoS has written to staff detailing the School's explicit support for flexible working and this is listed on the School website. A dedicated webpage on the HR website exists for flexible working/work-life balance under the "Staff Well-being" heading.

Figure 27 shows the perception of school staff across the academic and support staff cohort of implications of flexible working or leave on their career. Due to the lower number of support staff in the cohort that answered this question the perception of maternity and paternity leave is biased towards "maternity leave is regarded as damaging for the career" which is the strong view of female academics. 50% of the support staff that have responded to the survey have availed of the option and didn't experience any difficulties to return to their jobs. They have a gender balanced opinion of the effect of maternity/paternity on their career.

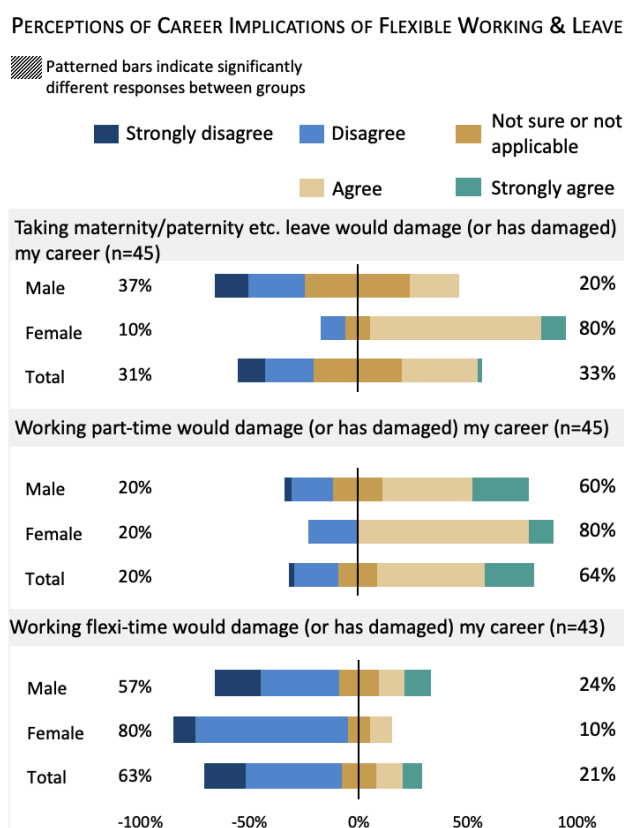


Figure 27: Maternity/paternity leave to flexitime perception of academics and support staff the AS survey within the school

#### 4.4 Organisation and culture

The School of Physics scored highly across a number of characteristics listed in the AS survey as relating to culture or work environment. **In particular, a noteworthy 98% (n=126) of all respondents agreed that the School of Physics is a friendly place to work** (Figure 28). Qualitatively, also, respondents were largely positive, although there was a call for improved communication and greater transparency in decision making.

To address the issues in communication, in 2019 the school has formally introduced two Academic Staff meetings per semester and two School Committee meetings per semester. The academic staff meetings take place during lunch hours to minimise disruption of the work day (lunch is provided). One key aspect of these meetings is the HoS updates of the activities and challenges of the school. The minutes of the School of Physics Executive,

School Committee and Academic Staff meetings (last 15 years) are online (local access) for all TCD members. Figure 28 outlines the cultural perception across various indicators as gathered in the survey.

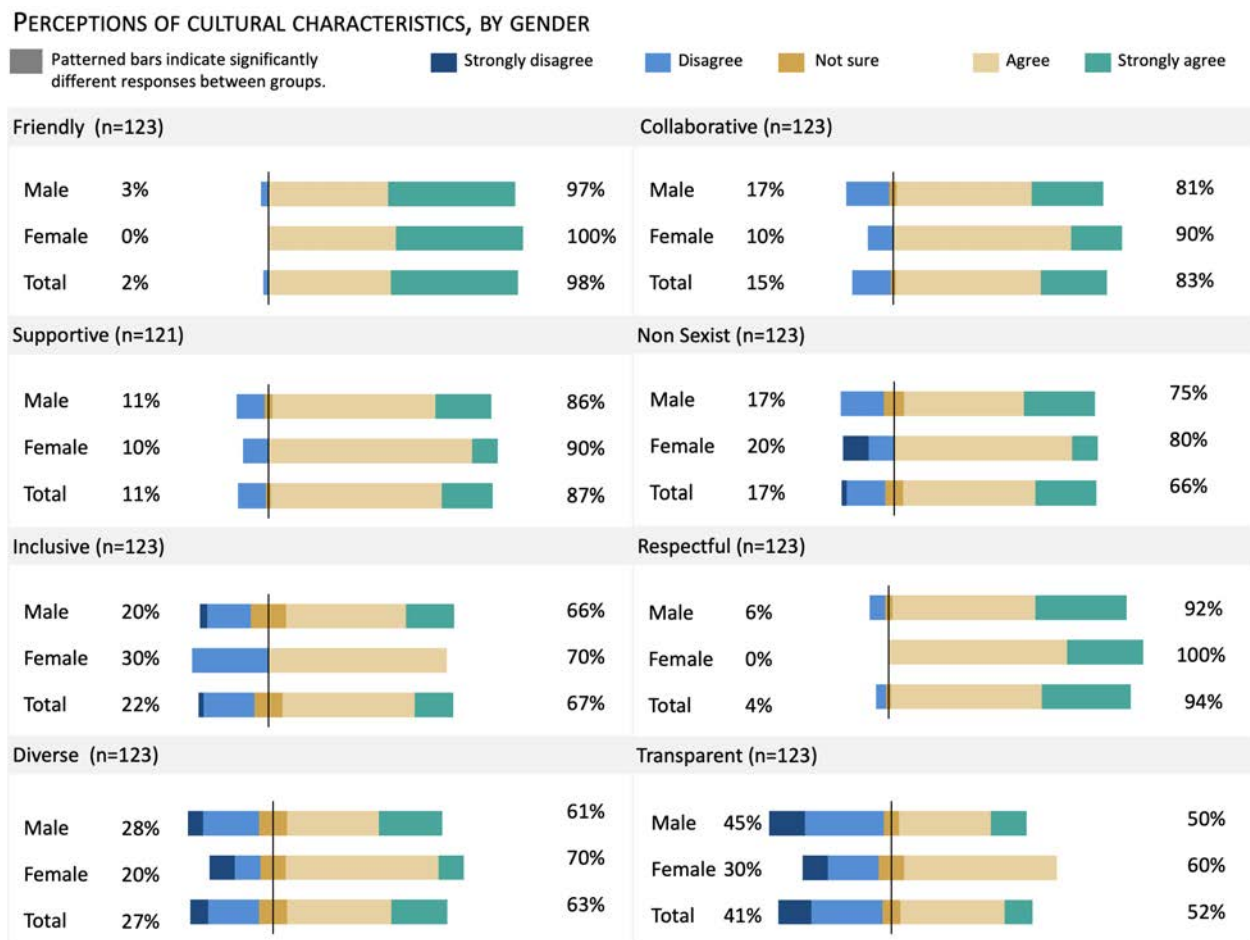


Figure 28: Cultural perception of working within the school of Physics by of Academics / PostDocs, Support Staff and PhD students. The distribution showed that there is no general gender imbalance across these topics within the school.

**Action 4.11** Include in next survey whether these meetings are improving communication and check quarterly whether committee minutes are updated.

#### 4.4 (i) Representation of men and women on committees

*Provide a breakdown by committee and explain any differences in gender representation. Explain how potential members are identified and comment on any consideration given to gender equality in the selection of representatives. Identify the most influential committees in the department and comment on how women are encouraged to participate in these and other influential external committees. Comment on how the issue of 'committee overload' is addressed where there are small numbers of women.*

Table 18 shows the breakdown of gender in the main committees of Physics. Membership of the SAT is based on personnel who can deliver actions in target areas as well as providing a gender mix in a very male dominated School. 5 members of the Executive are on the SAT.

This makes the SAT a very influential committee. All female and all male academics are on the academic staff committee.

In the survey 76% M, 80% F of the academics, support staff and PhD are aware of the AS initiative. 14% M and 10% F indicated participation. 90% F and 31% M of the academics considered becoming member of the AS team. Support staff over all genders were lower at 38% to become a member and not sure 46% whether they would engage.

Table 18: Gender distribution in the main committees the school of Physics.

Main Committees	Female	Male	%F
School Executive	1	8	11%
Academic Staff	4	24	14%
School of Physics (not including student reps)	7	29	19%
Undergraduate Teaching & Learning	3	8	27%
Athena SWAN	5	8	38%

In academic appointments we have invited external F academics to ensure gender balance in selection committees. Female academics still have to be on selection committees for other staff purposes (technical, admin). Due to the small numbers of F academics, this is an issue with committee overload.

**Action 4.12** Create a rota of female academics to spread out the overload in committee participation.

#### 4.4 (ii) Workload model

*Describe the systems in place to ensure that workload allocation' including pastoral, administrative and outreach responsibilities is fair, and whether this is taken into account at personal development review and in promotion criteria. Comment on the rotation of responsibilities; for example, those with a particularly heavy workload (such as leading on preparing an Athena SWAN submission) and those that are particularly valuable for an individual's career progression. State whether staff are aware of the details of the workload model and its outcomes, whether they consider it to be transparent and fair, and whether there are any gender differences in this regard.*

Physics has a model that allows workload to be compensated between some activities. The core academic functions of teaching and learning and management roles contribute to this model. The school has a transparent allocation of teaching duties. The Director of Undergraduate Teaching and Learning circulates to all staff with teaching duties their allocation at the start of academic years.

In figure 29 the satisfaction of the academics with their workload is evaluated.

There are no obvious gender disparities in workload perception as indicated in figure 29. Responsibilities are rotated over time. Some responsibilities are considered in HR promotion criteria at Trinity level via "Service to Trinity" and "Service to community" headings. At the moment, the HoS selects directors (Undergraduate Teaching, Graduate Teaching, Research, Global Relations), whose roles rotate on 2-3 year basis.

Qualitatively, in the AS survey there was a call for improved communication and greater transparency in workload allocation, which was also reflected in some of the more structured answers by academics, indicated here: "Greater and more regular communication of the



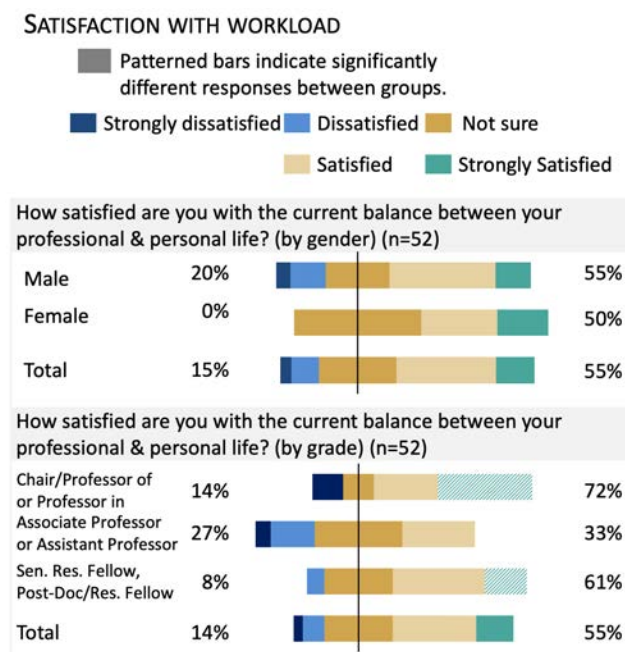


Figure 29: Satisfaction with current workload among the academics and postdoctoral researchers

work load and participation in discharging this by all would certainly improve matters”, “Allocation of teaching and other administrative responsibilities should clearly seek to protect the research time available of each and every academic (regardless of group size) and at present the allocations do not do so”.

**Action 4.13** Advertise school directorships internally so that interested staff can apply.

#### 4.4 (iii) Timing of departmental meetings and social gatherings

*Provide evidence of consideration for those with caring responsibilities and part-time staff; for example, what the department considers to be core hours and the systems in place to prevent particular staff being excluded from specific activities.*

The School operates in a framework where **all School meetings such as School Executive, Teaching meetings, School meetings, Academic staff meetings are held in the core hours of 10am – 4pm**. The main social gatherings are inclusive (Figure 28 & 30) and involve coffee events like First Thursday or seminar coffee events, again all within these core hours. AS SAT meetings are within these core hours. Occasional social gatherings, such as retirement celebrations, are held after working hours, to facilitate family members to attend.

Figure 30 indicates that the members of the school feel appreciated and included and that the timing of the events are appropriate. Figure 31 provides insights into engagement on a social level within the school.

Lecture hours in TCD are from 9am to 6pm. Due to timetabling constraints in the scheduling of lecture hours, it is unavoidable to allocate classes to the 9am and 5pm slots. However our School Administrator together with the Director of UG Teaching and Learning avoided allocating lectures at 9am and after 5pm for academics with young children or with other caring responsibilities.



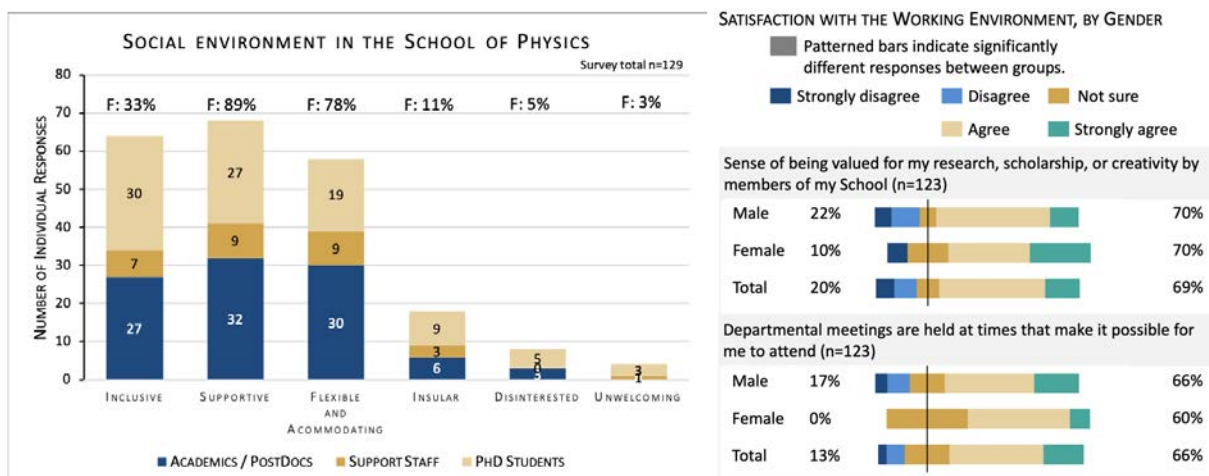


Figure 30: Social attitude within the school. Left: Social environment perception. Right: Appreciation and timing of meetings

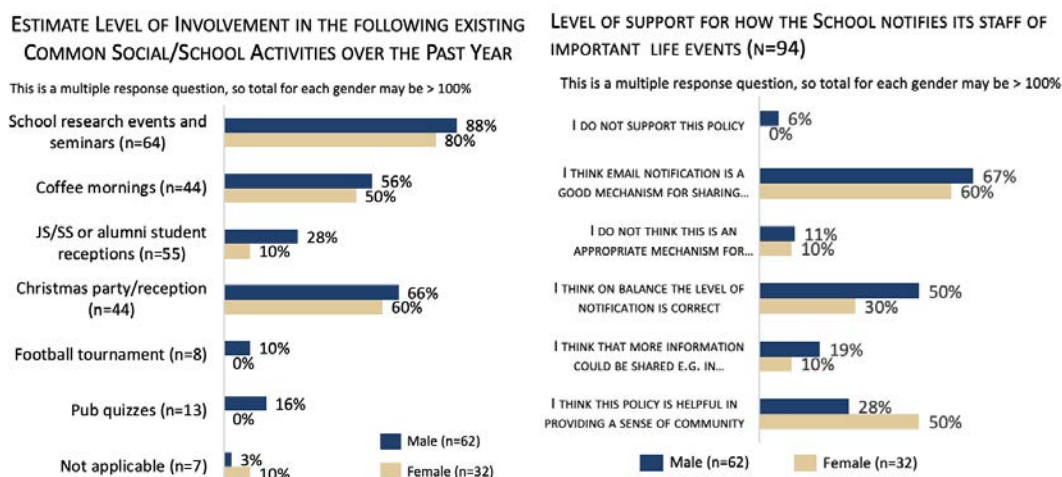


Figure 31: Level of involvement in the school (across the school).

#### 4.4 (iv) Visibility of women as role models

*Comment on the gender balance of speakers and chairpersons in seminars, workshops and other relevant activities. Comment on publicity materials, including the department's website and images used.*

There is strong female academics participation in first year undergrad teaching. Two female academics and one female research fellow teach first-year courses and undergraduate laboratory. Another one coordinated and was teaching the Physics for Engineers module. According to School policy, there are at least two female students assigned to each small tutorial group aimed at first year students. The 'Teaching and Learning' module, aimed at first year postgrad students is taught by a female academic. Postgrad students in this module take unconscious bias training.

Since its introduction in 2013, the SAT has promoted gender balance among our colloquium speakers (Table 19). Our target of 40% has been met, with the exception of 2016/17, where we were at 38%.

Table 19: Gender distribution in the school Colloquia.

Year	Number of colloquia	Number of F speakers	% F
2014/15	9	4	44%
2015/16	8	4	50%
2016/17	8	3	38%
2017/18	9	4	44%
2018/19	9	4	44%
2019/20	9	4	44%
total	52	23	44%

**Action 4.14** Maintain gender balance of colloquium speakers.

Our School webpages contain a well-balanced visual representation of female and male students and academics, reflecting the diversity in terms of gender. Our handbooks for undergraduate students always have gender balanced photos in the cover (Figure 33, left). Our newsletters, sent to alumni of the school, also provide a well-balanced representation of news about our female staff.

Our female academics are usually involved in the launch of the Physical Science stream (see Figure 32) and we are promoting women in STEM in the broader community, and they regularly take part in diversity events.



Figure 32: Visibility of women. Launch of Physical Sciences course in 2017 with Prof. Paul Eastham, Dr. Aoife Ryan (presenting), and Prof. Cormac McGuinness

To cite a few, Prof Louise Bradley was a panellist member of the 2017 "Inclusion and Diversity in Photonics in Ireland". She was also featured in the 2017 planner of SPIE women in optics (Figure 33, right) and 2019 speaker at Women in STEM. Prof Aline Vidotto spoke in the 2018 event of Women in Physics and Maths and Prof Kate Maguire recently spoke at the Irish Congress of University Astronomy Societies 2020.

In recent years, two outstanding female Physicists, Professor Margaret Murnane from University of Boulder and Professor Michal Lipson of Columbia University were awarded Honorary Degrees by TCD in recognition of their sterling role in promoting Physics and female Physicists. They both gave workshops in TCD explaining how they had developed their careers and maintained a good work-life balance. The events were well attended and female postdocs recommended the occasion on twitter. Dame Susan Jocelyn Bell Burnell became honorary fellow of Trinity in April 2020.



Figure 33: Visibility of women. Left: cover of our undergraduate handbook. Right: 2017 planner of the SPIE women in optics featuring one of our academics.

#### 4.4 (v) Culture

*Demonstrate how the department is female-friendly and inclusive. 'Culture' refers to the language, behaviours and other informal interactions that characterise the atmosphere of the department, and includes all staff and students.*

The School of Physics is renowned for its friendly atmosphere as previously discussed with 98% approval in figure 28. Academics and non-academics get together for a coffee break every morning. This is when all the staff have a chance to talk to each other (academic, admin, support and research staff). We have an ample library where our coffee breaks take place.

To better embed the AS charter principles into the School's culture, the SAT had a 'brainstorming' activity during the summer of 2019 and we proposed two actions to better improve the female-friendly and inclusive culture of the School. As indicated in Figure 28 the results of the AS survey confirm that perception.

1. The School is proud of its 3 centuries of tradition in Physics and we have portraits of Physicists who once were in Trinity. However, all of these paintings are of male physicists. We regularly receive members of the public (school children, amateur astronomers, parents) in our buildings and we would like to endorse and support equality in our public spaces. To make the School more attractive to potential staff, students and collaborators, we have created an action to add portraits of female physicists in our public spaces, to increase gender balance in the portraits on display.



2. We have a couple of networking events per year for our female students and staff, so that the students can see progression in the careers of female physicists. Although the School and TCD have AS Bronze awards and the logos appear in our materials, when undergraduate students were surveyed “Do you know what the Athena SWAN award is?”, 99/143 (69%) of students answered ‘No’. To better promote our AS Bronze award and our JUNO Practitioner status, we have an action to develop a statement of values on equality that will be prominent in all the materials used to communicate with students, including handbooks, induction talks in freshers week and in our webpages.

**Action 4.15** Add 2 female portraits by end of 2022.

**Action 4.16** Statement of AS values in all UG/PG material and webpages.

#### 4.4 (vi) Outreach activities

*State the proportion of men and women involved in outreach and engagement activities. Comment on the uptake of these activities by gender, where possible.*



Figure 34: Top left: Students in the Transition Year Physics Experience (TYPE) programme 2018. Top right: School of Physics Ph.D. students at the BT Young Scientists Exhibition (January 2020) with students Lucy Prendeville, Luke Hannigan. Bottom left: Laura Hayes, PhD student in Physics, helps one of the younger visitors focus in on Mercury's transit across the Sun (2018). Bottom right: Prof Aline Vidotto looks on as an interested viewer enjoys the Mercury Transit in November 2019

Staff support our outreach initiatives by volunteering annually based on their availability, we aim to provide this gender balanced. Most male academics contribute and all female academics do so regularly.

Since 2005/06, TCD Physics organises a one week-long and 2x1 day Physics events in-reach initiatives where 15/16 year olds apply for the Transition Year Physics Experience (TYPE) programme (Figure 34, top left). **We are heavily oversubscribed and have a policy of 50% F on these successful programmes.** Some of these females have later obtained high points required to join us as undergraduates. Our female academics are also involved in giving talks for the Trinity Access Programme, aimed at young people from areas with low progression rates to higher education to reach their full educational potential. The BT Young Scientist and the TYPE events appeal to much younger audience.

On the event of the Mercury's transit, the School mounted a number of telescopes for the public to observe Mercury's transits across the Sun. **Our demonstrators were gender balanced in all events and we had a number of news items showcasing our initiative in national media (Figure 34 bottom).**



Figure 35: Left: Invitation to the women in Science event. Right: Picture of the panel discussion indicating that gender equality is important to promote female STEM education. The audience of approx. 80 attendees was gender balanced.

In 2020, for International Day for Women's rights an event was organised by the School of Physics in partnership with the French Embassy, the German Embassy and the Goethe Institute (see figure 35). The public was invited to engage, learn and exchange about what it means to be women in science, from Marie Curie to today. The Irish Premiere screening of the Franco-German-Polish film "Marie Curie – The Courage of Knowledge" was followed by a panel discussion featuring three TCD women in research (Two faculty members (among them Louise Bradley from Physics) and a postdoctoral student that is funded by the Marie Curie program) and promoted opportunities for girls in STEM.

#### 4.4 (vii) HR policies

*Describe how consistently HR policies about equality, dignity at work, bullying, harassment, grievance and disciplinary processes are applied and followed in practice. Describe how the application of HR policies in the department is evaluated.*

The University's policies on Dignity and Respect date back to national Employment Equality Acts and Code of Practice. University policy on bullying and harassment is publicised to all staff by HR, Equality and Diversity & Inclusion online and with the issue of a leaflet, posters

in all departments, the appointment of ‘contact persons’ for bullying and harassment across faculties, and set procedures to be followed. In the school website, there is a link to Trinity policies. Trinity policies on equality, dignity at work etc. are evaluated at the level of the university committee overseeing the policy and its implementation.

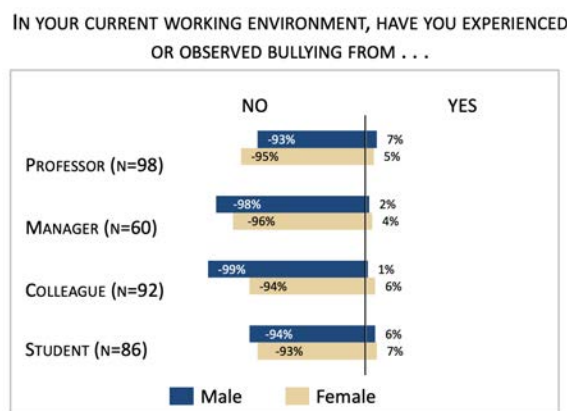


Figure 36: AS Survey 2019/20 School of Physics Experienced or observed bullying in the school.

In the AS Survey we evaluated the adherence to Dignity and Respect within the School of Physics. In some cases members of the school across all groups indicated that they were subject to adverse behaviour such as bullying (figure 36) or harassment (figure 37).

When further questioned whether they reported the incidents, the individuals disclosed that they are aware of the official channels within the workplace and Trinity. Females tended to consult colleagues and a minority of male chose other channels (figure 38). All persons declared that the behaviour stopped. *Word Count: 5095*



# BEHAVIOURS EXPERIENCED IN RESPONDENT'S CURRENT WORKING ENVIRONMENT

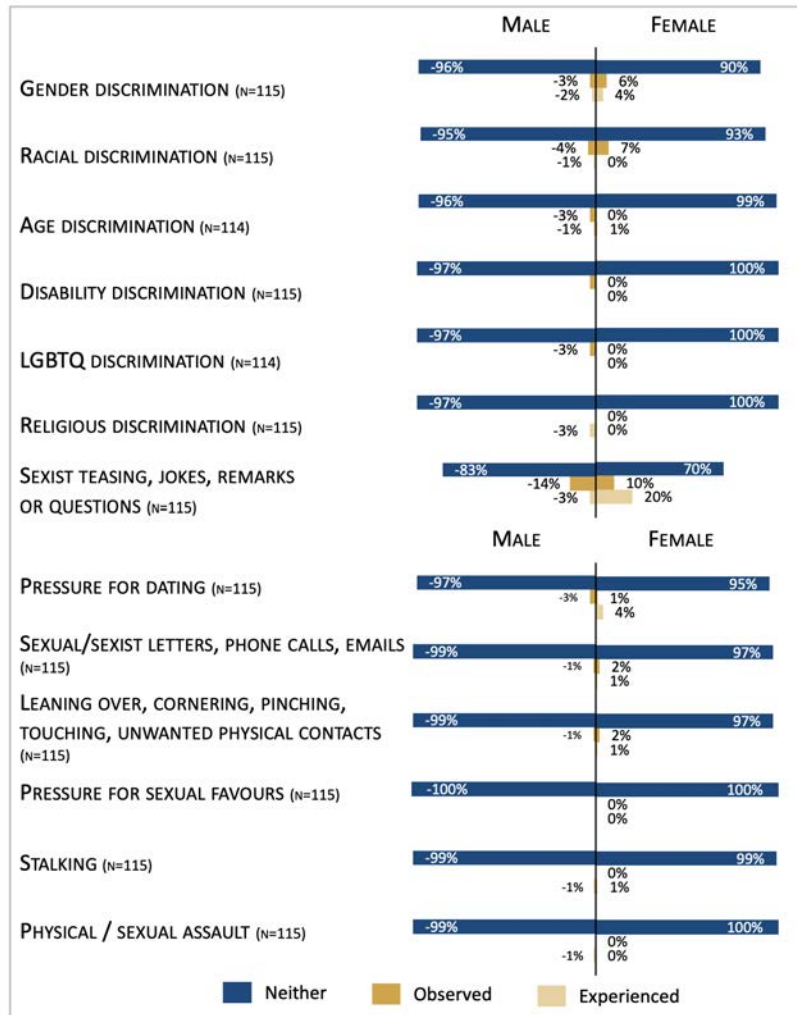


Figure 37: Top: AS Survey 2019/20 School of Physics Experienced or observed harassment in the school.

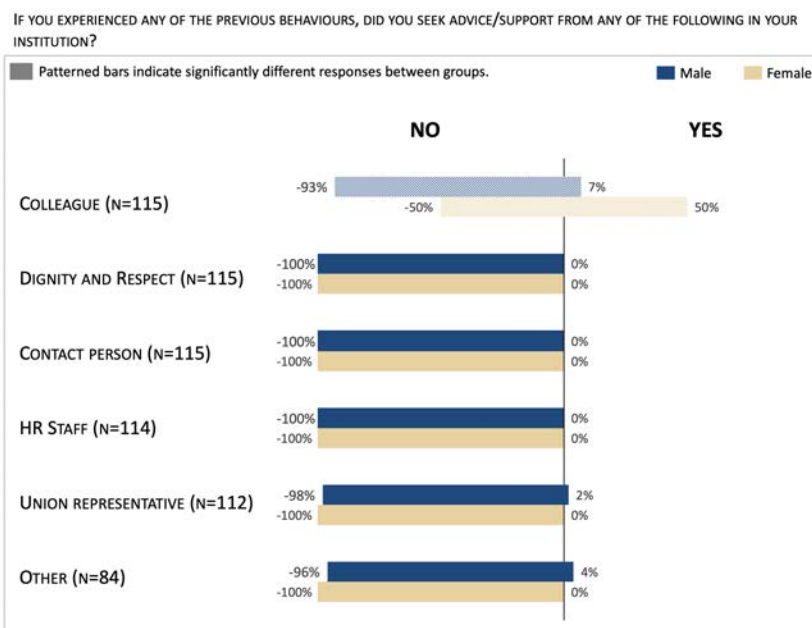


Figure 38: Advice sought by the involved persons whether from institutional contacts or other sources

## 5 Any other comments: recommended 500 words

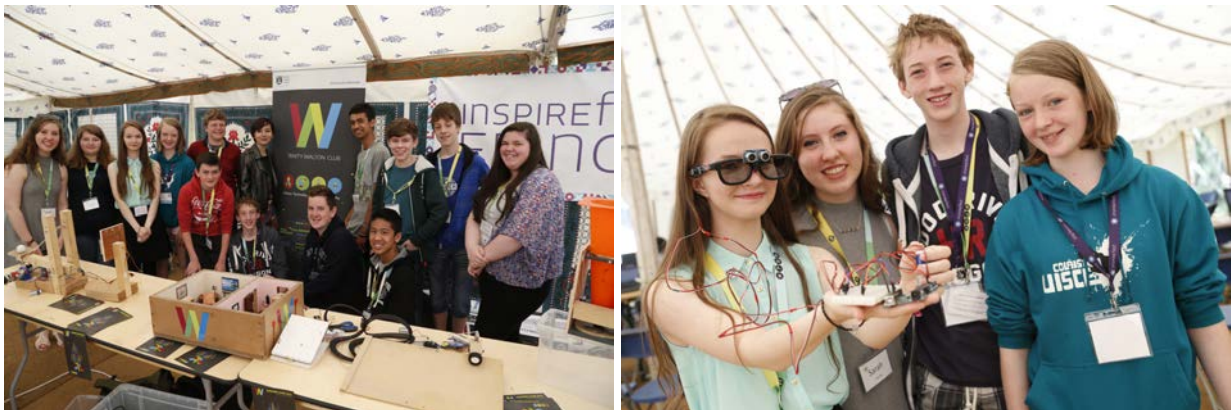
*Please comment here on any other elements that are relevant to the application; for example, other gender-specific initiatives that may not have been covered in the previous sections.*

### • In-reach programme with teenagers

Irish students who wish to apply for places in Irish universities take the Leaving Cert examination, whose results are used to rank students in the national points system. Only about 13% of Irish students take the subject Physics in the Leaving Cert (data provided by the Institute of Physics Ireland, averaged over past 12yrs). Among these, approx. 25% are female. This means that, nationally, only 4% of Leaving Cert students are females taking the Physics examination.

To change this picture, TCD Physics pioneered an initiative to attract young people (12-18 y/o) who are interested in STEM (science, technology, engineering and maths) disciplines, through the Trinity Walton Club (TWC, Figure 39). We have hired a dedicated academic (Prof Arlene Gallagher) to develop and run TWC. Over the first five years of its existence, TWC has brought together a community of over 20 academics, 15 administration staff, 100+ STEM PGs and UGs, to develop and deliver STEM educational enrichment opportunities. **To date, over 1400 teenagers have embarked on their STEM journey and 48.4% of the students are female. Additionally, the educator cohort is gender balanced, promoting visibility of females in STEM and creating a network of role models for the next generation.** TWC is committed to tackle gender and social disparities in STEM, and provide active and practical leadership on such an important matter.

There is no better example of this kind of STEM initiative anywhere else in the country given the exceptional scale, depth of engagement and longevity of the programme.



*Figure 39: For the past four years, the Trinity Walton Club has supported post-primary students to pursue STEM. Gender balance is ensured among students and educators.*

*"TWC has influenced me beyond what I expected... not only did I learn some AMAZING science, it changed the way I think. Someday I hope that I can also inspire so many young kids to take up a career in science & encourage them to be better people"*

Trinity Walton Club student

*"I truly owe a lot to Trinity Walton club. Thanks to what I've learned and experienced there, now I want to pursue physics at third level, I have a deep love of all things STEM, and I've become an advocate for STEM education."*

Trinity Walton Club student

The School recognises that achieving gender equality in STEM subjects requires influencing the wider community and actively adapts policies in light of new evidence-based research.

**Action 5.1** Continue excellent TYPE - and Walton Club programs. Actively engage with IoP workshops, JUNO network and gender-equality networks.

### • Supporting F undergraduates

The School awards four Entrance Scholarships to first year students which are worth €750 each. These scholarships are intended to attract high-achieving students to study Physics at Trinity. Two of the scholarships are reserved for women and two are open to all students.

### • Summary

Since the seminal work for our JUNO Practitioner status, TCD Physics has seen a change in culture in its environment to promote women in Physics. Regularly, male and female academics ensure that gender balance is promoted within the different activities of the School. From the outset the SAT has been inclusive of all staff, has gathered quantitative data and implemented initiatives across staff categories.

Word count: 393

Word count total: 9224 (w/o figures, tables, actions, quotes)

## 6 Action plan

*The Action Plan should be presented as a table, comprised of prioritised actions to address the issues identified in this application. For each action, an appropriate success/outcome measure should be defined, as well as the person/position(s) responsible for the action, and timescales for completion. The plan should cover current initiatives and your aspirations for the next three years. Actions, and their measures of success, should be Specific, Measurable, Achievable, Relevant and Time-bound (SMART).*

Abbreviation	SAT Member
CTO	Chief Technical Officer
DUTL	Director of Undergraduate Teaching and Learning
DPTL	Director of Postgraduate Teaching and Learning
HoS	Head of School
OC	Outreach Coordinator
SA	School Administrator
DPS	Director Physical Sciences
SATC	Women in Physics/SAT Chair

<b>Chapter 2</b>	<b>The self-assessment process: Continuously update gender awareness of new members of school (staff and student members) and keep school surveys and SAT membership up to date.</b> We recognise that the unconscious bias training and gender awareness is important at all levels of school activities. The AS survey was evaluated by an external consultant to maintain anonymity of the participants (costs >5k€). <b>The quantitative and qualitative AS survey analysis shows that there is minimal gender imbalance across the 85 questions evaluated (see individual topics discussed in the application).</b> Surveys have to be up to date and the cohort has to have the chance to bring up new issues when they arise. This renewal application is under the initial charter and we will have to adapt to the newer charter if the same principle is to be followed in three years. The SAT membership puts extra administrative workload onto its members, a rotation of members is required			
Issue Identified <i>Summary of Action</i>	Actions taken & planned	Measures of success / Targets	Responsibility	Target date
<b>A2.1</b> The School acknowledges the importance of unconscious bias training for all school members.	Roll out unconscious bias training at all levels of the school from Academics to Support Staff and research staff (Postdocs and PhD students).	Impact of training monitored through surveys. Target: all members have been trained.	Level Coordinators & SAT.	Quarterly with new school members
<b>A2.2</b> The AS surveys should evolve (bi-annual was preferred option chosen in last survey).  Survey software license and external analysis >6k€ for the school (three cohorts: Academics/Support staff/PhD students) 90% of questions would be equal across University. This could be centralized and gender analysis be done at University level to keep anonymity.	Survey results have to be presented at the individual levels within half a year after surveying. Survey adaptation based on input of the SAT and calls for topics/adaptations at school level. Evaluation of actionable points. Centralisation was discussed as AS champion meeting spring 2020, university did not contribute to survey work/fund costs. By centralizing survey (launch and analysis) at University level the costs can be greatly reduced. We will lobby for this at AS champion network level.	Feedback of members after presentation of results. Maintain positive perception of School environment by students and staff. Centralized survey and analysis implemented with 10% school specific input at university level. Response rate target level at >60% across cohort.	SAT  HoS, SATC	Summer 2020 Ongoing bi-annually  Jan. 2021
<b>A.2.3</b> Funding/support for AS activities is essential, a dedicated funding account was set up in early 2018 from overheads to promote activities "Women in Physics".	The School's funded activities and AS survey/evaluation, ensure that funds are available to support our activities. Apply for additional funding support from College and the Faculty of Maths, Engineering and Science.	Reduce school costs for survey evaluation, to have 1000 € p.a. available for WiP activities.	HoS, SATC	Jan. 2021

## School of Physics Bronze Renewal Action Plan 2020

<b>A2.4</b> SAT membership puts extra admin workload onto its members.	Revise SAT membership annually and plan for phased rotation over a 3 year period.	Members should serve for at least 2 years. Improved monitoring .	SAT	Ongoing, evaluations each semester
<b>A2.5</b> We renew now under the initial AS charter. Renewal of Athena SWAN in 2023.	Evaluate new charter and start preparing to collect the additional data needed under the new charter, start including professional and support staff more in the process.	Expanded data set available and reported on annually. SAT members updated on other European gender initiatives.	SAT, College champion network	Jan 2021

<b>Chapter 3</b>	<b><i>A picture of the department and its composition: Attracting, supporting and retaining female students, postgrads in Physics.</i></b> Our analysis shows small gender differences in performance across all years and that our undergraduate (UG) numbers were dropping slightly after the introduction of the Trinity Education Project in 2018. But the proportion of female applicants and entries increased steadily ~29 % with male entries. Within Physics the female proportion at PhD and postdoctoral level continues to climb. UG female students either perform equally as well, or outperform their male counterparts. A new Postgraduate taught (PGT) was recently introduced. Considering an inter-/national pool of ~ 22% female physicists is available. We recognise that monitoring at all levels (entry, performance, retaining, leaving) is crucial to reveal trends.			
<b>Issue Identified</b> <i>Summary of Action</i>	<b>Actions taken &amp; planned</b>	<b>Measures of success / Targets</b>	<b>Responsibility</b>	<b>Target date</b>
<b>A3.1</b> National data still not available through Higher Education Authority, some data on earnings available. National data across all seven University Physics Departments have been collected since 2013.	TCD Physics to support and contribute to national University Physics data collection until/if the HEA collects and supplies relevant data.	Data sharing with these Departments. Annual data available for benchmarking nationally.	SATC, SA	Annually, every March
<b>A3.2, A3.3</b> We have invested a significant amount of time and personnel to gather gender disaggregated degree data manually since 2009. This has to be facilitated through university student information system (SIS).	Monitor undergraduate gender, performance and recruitment data. Draw the degree grade gender disaggregated profile in examiners meeting annually. Lobby at university level implementation of automation in student information system.	Gender disaggregated UG performance data presented annually. Attainment in Trinity is still higher than national Physics average by 2023.	SATC, DUTL	Bi-annually, every January, June

## School of Physics Bronze Renewal Action Plan 2020

<p><b>A3.4</b> We improved the gender retention issue of students taking 'Physics and Physics and Astrophysics' from 1st to 2nd year. But we noticed that a larger proportion of F students left Physics from 2nd to 3rd year. This might be an anomaly from the time until 2018 when students ('general science') made major choice of their degree (for example, go to a Biology –, Geography –, Geology degree, etc).</p>	<p>The new Physical Sciences entry scheme is in place since Aug 2018, students select Physics degree at day 1. We will monitor gender retention at every single year through the new degree. Develop and implement strategy to address any issues arising.</p>	<p>Early awareness of gender issues and capture of retention in the new Physical Sciences entry scheme after year 2. Gender difference in retention is less than 10%,, monitored annually.</p>	<p>SATC, DUTL, DPS</p>	<p>Annually, every June</p>
<p><b>A3.5</b> Female PhD career awareness.</p>	<p>Include PG opportunities in our soft skills module taught to 3<sup>rd</sup>/4th year students, so that students are aware of PG opportunities earlier in their career.</p>	<p>PhD presentation in soft skill module introduced. A 2% increase in the proportion of female UG students considering continuing to PG study in Physics (to reach national %F average).</p>	<p>DPTL, DUTL, DPS</p>	<p>Start in academic year 2020/21</p>
<p><b>A3.6</b> Monitor undergraduate recruitment in the new Physical Sciences entry. Extensive and novel outreach (Walton Club, TYPE, Female Scholarships) is targeting talented teenagers. These programmes are strictly gender balanced.</p>	<p>Walton Club pupils have reached University age in 2019. Track its impact in the recruitment of a higher percentage of females. Include Walton Club, TYPE etc. in new entry surveys.</p>	<p>Maintain high percentage of F entrants (&gt;28%) and more importantly above the national average of ~23%. Entry survey implemented.</p>	<p>DUTL, OC, DPS</p>	<p>Annually, every September</p>
<p><b>A3.7</b> Monitor Postgraduate Application data, independent of funding source and maintain current female PhD ratio at or above national average.</p>	<p>Complete postgraduate application statistics from all PIs. We have one large event for PG recruitment in October, where we invite students from TCD and other universities in Ireland to attend an information session. Ensure that such recruitment events have F role models. Evaluate recruitment impact annually.</p>	<p>PhD application statistics obtained. Report on any gender gap in application and success rates, and target a reduction in same if a gap is found. Evaluation implemented. Female PhD % target to steadily increase to 28-30%.</p>	<p>DPTL, DUTL</p>	<p>Annually, every October</p>
<p><b>A3.9</b> Monitor staff leavers data</p>	<p>Make sure that relevant leaver's feedback is communicated to line manager of the exiting staff member. Extend exit questionnaire to post-docs.</p>	<p>Documented feedback from exiting staff informs future School actions and leads to a better environment for</p>	<p>SATC, SA</p>	<p>Annually, every March</p>



		current staff. Develop anonymous feedback alternative.		
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Chapter 4 and 5	<b>Supporting and advancing women's careers: Recruitment of female staff in Academic and Research positions, Career development, promotion, and supporting key transition points for staff</b> The School has had great success in appointing junior female academic staff in recent years. However, there is still a lack of senior female staff at 'Professor of' level. Efforts will be focused on nurturing this new talent pool through to more senior grades and positions. Furthermore, we recognise the need to assist postdocs in the key transition point to Assistant Professor level in order to maintain a sufficient pool of junior female academics to feed the career pipeline in Physics. The School survey highlighted that PhD students across both gender were less likely to consider an academic career and tend to target Industry or other jobs. <b>Developing a culture supporting inclusivity &amp; equality within the School of Physics</b> Within the School survey there were positive responses regarding culture, flexibility in working hours, working environment, as well as supervision & respect from line-managers. However more effective communication was identified as an area requiring improvement as was improvement of family friendly policies and support of those with caring responsibilities.				
Issue Identified <i>Summary of Action</i>		Actions taken & planned	Measures of success / Targets	Responsibility	Target date
A4.1 The School acknowledges the lack of women at senior academic levels.  Low numbers of F candidates make to the interview. In some cases, no F candidates are interviewed. Change Shortlist target.  <i>Encourage more female interest in job positions through effective publicising of gender-equality and family friendly policies within recruitment material.</i>		Encourage current female academics to apply for further Senior promotions. HoS to hold one-to-one meetings with female academic to discuss career planning and preparation for promotion. We have modified the job ads to promote our Athena SWAN Bronze award and our Juno Practitioner status to actively promote females applications. Gender proof language of all job ads to ensure they are gender neutral. For senior posts, liaise with HR to use search committees to specifically target female applicants. Encourage staff to be proactive using their networks of contacts to encourage the best possible applicant pool with a view to encouraging a strong field of	Eligible female academics applied for further Senior promotions.  Target: 25% of applications for academic and research positions to be from females by 2021 for every recruitment.  Ensure that serious consideration is given to shortlisting for interview at least one candidate of each	HoS  HoS , SAT members on Physics recruitment panels	2020 ongoing  2020 ongoing

## School of Physics Bronze Renewal Action Plan 2020

<p><b>A4.2</b> Transparent recruitment procedures for research staff.</p>	<p>women as well as men to apply. Target Women in physics networks.</p> <p>We started monitoring postdoctoral researchers independent of funding in 2017 and noticed a balanced recruitment in 2019. Continued monitoring of recruitment at PI level. Remind PIs that serious consideration is given to shortlisting for interview at least one candidate of each gender. Gender proof language of all job ads to ensure they are gender neutral.</p>	<p>gender. Written justification must be provided in the event of any single gender shortlists.</p> <p>30% Female at postdoctoral and postgraduate level.</p>	<p>HoS, SATC</p> <p>include Postgrad rep, Postdoc rep for add neutral appearance</p>	<p>2020 On-going</p>
<p><b>A4.3</b> Ensure induction handbooks are sent to every new staff and include Athena SWAN information in UG and PG student handbooks, staff handbook.</p>	<p>Staff should receive their induction handbook at the time their contracts are issued and made aware of AS information. Revised communication between the School and staff.</p>	<p>All new staff receive induction booklet. In staff survey 75% for both gender report that the induction booklet is useful.</p>	<p>SA, CTO</p>	<p>2020, On-going</p>
<p><b>A4.4</b> Personal development review and mentorship are beneficial for career progression. PhD don't have development review. Postdocs and PhD do not have mentor outside of their research group.</p>	<p>Revise our way to communicate with new staff, included also in a "welcome" message at the time staff is included in the Physics mailing list.</p> <p>a) Mentorship scheme is more widely advertised to new academics. b) Evaluate demand of personal development review and mentorship outside of workgroup for Postdocs and PhD students in next survey.</p>	<p>New academics and research staff are aware that they could avail of mentorship support and development review. Implement when demand exists and that they avail of it.</p>	<p>a) HoS to clarify mentorship to all new staff</p> <p>b) SA</p>	<p>a) Next staff academic meeting (Jul 2020) b) July 2021 survey</p>
<p><b>A4.5</b> Encourage all academic staff to apply for promotion, reintroduction of promotion for support staff within school.</p>	<p>Communicate who was successful in recent promotion processes. Encourage staff who seek promotion to contact them. This might improve success rates for promotion due to clearer understanding of what college is looking for/assessing. Once done, survey staff. Lobby at University level that promotions for support staff are introduced again and possible within school.</p>	<p>A promotions process where men and women all feel encouraged to apply for appropriate promotions. Survey academics.</p>	<p>HoS</p>	<p>Each promotion round</p>
<p><b>A4.6</b> Balance workload for female staff in outreach.</p>	<p>Current outreach activities are gender balanced.</p>	<p>Promotion process re-introduced for support staff.</p> <p>Involve Postdocs in outreach lecturing. At least 3 female</p>	<p>HoS</p> <p>OC</p>	<p>University board meetings</p> <p>Yearly, depending on Event</p>

## School of Physics Bronze Renewal Action Plan 2020

	Low numbers of F academics means reduced pool of F speakers during e.g. Open Days. Postdocs expressed interest for teaching/lecturing in survey. Involve female postdoctoral researchers where possible.	postdocs involved in delivering outreach activities annually.		
<b>A4.7</b> Collect gender-disaggregated data in SURE programme and raise female participation.	The Summer Undergraduate Research Experience (SURE) programme is a route for our undergraduates to obtain research experience in Physics. Increase female acceptance to program	Female undergraduates apply for and at least 20% allocated SURE places.	DUTL	Start in summer 2021 and annually monitor
<b>A4.8</b> Increase postdoc integration in the School.	a) Encourage Postdocs to participate in teaching for career development/integration and in college career development courses. b) Postdocs expressed in survey explicit willingness to be involved in teaching. Discuss in next academic meeting.	a) Postdocs attend development courses b) Postdocs integrated in teaching and 50% report in next survey having appropriate career development opportunities with the school.	HoS, DUTL	Before beginning of teaching terms (July/August)
<b>A4.9</b> Continue face-to-face unconscious bias training for all staff including UG lab demonstrators.	Postgrads will take unconscious bias training during the "Teaching and Learning" module, which is a required module for 1st year Postgrads. Invite all other staff to next sessions of unconscious bias trainings.	All postgrad students have taken unconscious bias training.	DPTL	Jan. 2021 and continuing
<b>A4.10</b> Returners leave data is deleted by University HR after leave has been taken. School needs to monitor and support. Promote schools support for flexible working. <i>We will actively promote &amp; advertise work-life balance, family friendly policies, and mentoring schemes through a variety of outlets.</i>	Clearly advertise to research staff requirement of 10 statutory days of paid paternity leave through induction booklets. Require line managers of research staff to provide data on paternity leave on annual basis. Support staff has availed of the possibility. Lobby at University HR level to collect and keep leave data and provide to School annually. Ensure that F academics are provided reduced teaching duties in their first semester after back from maternity leave.	All academics are aware of the leave scheme.  Data on leave collected.	HoS, SA	Summer 2020
<b>A4.11</b> Include in next survey whether meetings are improving communication and check quarterly whether committee	a) Update communication questions in survey, b) check online minutes. Communicate to staff where these can be found.	Survey updated. Minutes up-to-date.	SATC, SAT	a) July 2021 b) quarterly

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minutes are updated. Some minutes are currently outdated.				
<b>A4.12</b> Committee overload of F academics.	Selection committees are always gender balanced. While in academic appointments, we invited external F academics to ensure balance of gender, F academics still have to be in selection committees for other staff (technical, admin). Create a rota of F academics to spread out the overload in committee participation.	Rebalanced committee load of F academics F academics report equal amount satisfaction with workload as their male colleagues in next survey (current)	HoS, SA	July 2020, monitor annually
<b>A4.13</b> Currently directorships are populated ad-hoc. Advertise directorships so that interested staff can apply.	At the moment, the HoS selects directors, whose roles rotate on 2-3 year basis. This is perceived (survey data) that people never selected are disadvantaged in terms of opportunities for progression.	Internally advertised directorships so that interested staff can apply.	HoS	Next round of directorship assignment 2022, monitor after that
<b>A4.14</b> Currently colloquium speakers gender is balanced	Target of 40% female School seminar speakers has been met since its introduction in 2013. Raise to 50%. Academic staff to be reminded to make every effort to invite a percentage of female speakers.	Maintain >40% school seminar speakers	SAT, DUTL	Annually July 2020
<b>A4.15</b> Increase gender balance in the portraits on display	Add portraits of female physicists in our public spaces, to increase gender balance in the portraits on display. Making the School more attractive to potential staff, students, collaborators.	2 Portraits mounted by 2022	CTO	July 2020
<b>A4.16</b> Increase school awareness of gender efforts at UG level	Develop a statement of values on equality that will be prominent in all the materials used to communicate with students (handbooks, induction emails and talks, etc) and in our webpages. Re-survey student in 2 years' time.	50% awareness of students of principles of the School towards being an equitable work/study place.	SAT/SA	August 2020
<b>A5.1</b> The School recognises that achieving gender equality in STEM subjects requires influencing the wider community and actively adapting policies in light of new evidence-based research.	a) Continue excellent TYPE - and Walton Club programs. b) Actively engage with IoP workshops, JUNO network and gender-equality networks. Maintain awareness of gender-equality research and relevant conferences (e.g. as run by the IoP in particular).	TYPE and Walton Club program organised	SA, SAT	a) bi annual ongoing
		1-2 SAT meetings per year dedicated to best practice nationally/internationally, and how learning can be applied within the School.	SAT  Juno & AS Champions	b) Dec 2020  ongoing

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<i>We will continually engage with external gender equality initiatives &amp; identify beacon activities and examples of best practice.</i>	All conferences/workshops hosted/organized by School of Physics have an organizer that is aware of inclusivity and diversity. SAT draw up a protocol for what needs to be considered to ensure diversity and inclusivity in all such events.	Creation of network, and organise meeting of Juno Ireland supporters. 1-2 workshops/conferences on gender equality relevant to Physics/STEM attended annually by a SAT member	Academic Staff	ongoing
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