

IOP Project Juno

“A reflection of over a decade of
equality and diversity work within the UK”

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Lepton Photon 2021, Manchester



IoP Project Juno

What?

Where?

Why?

How?

What ? In more detail

- **Six Principles**
- In Practice: what can Universities do

Reflection & Outlook

What next?

"Physicists Version"

- Abstract
- Introduction/Theory
- Experimental Method
- Results
- Conclusion/Outlook



What is IoP Project Juno ?



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IOP | Institute of Physics
Juno Champion

Project Juno is the IOP's flagship **gender equality award**

Where ?

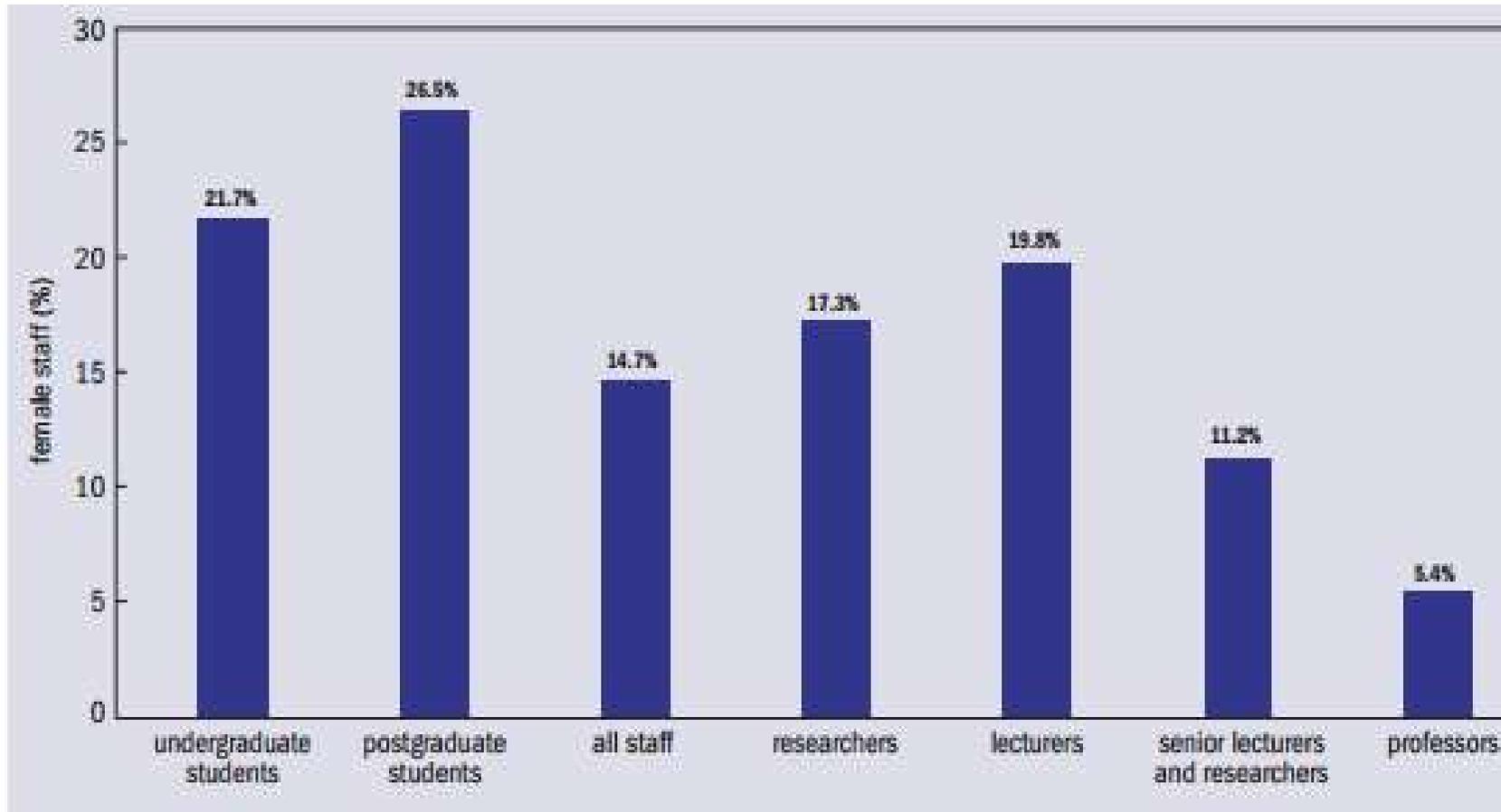
for

university physics departments
schools of physics, and
related organisations.

Why? Women In University Physics



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IOP Statistical Digest 2010

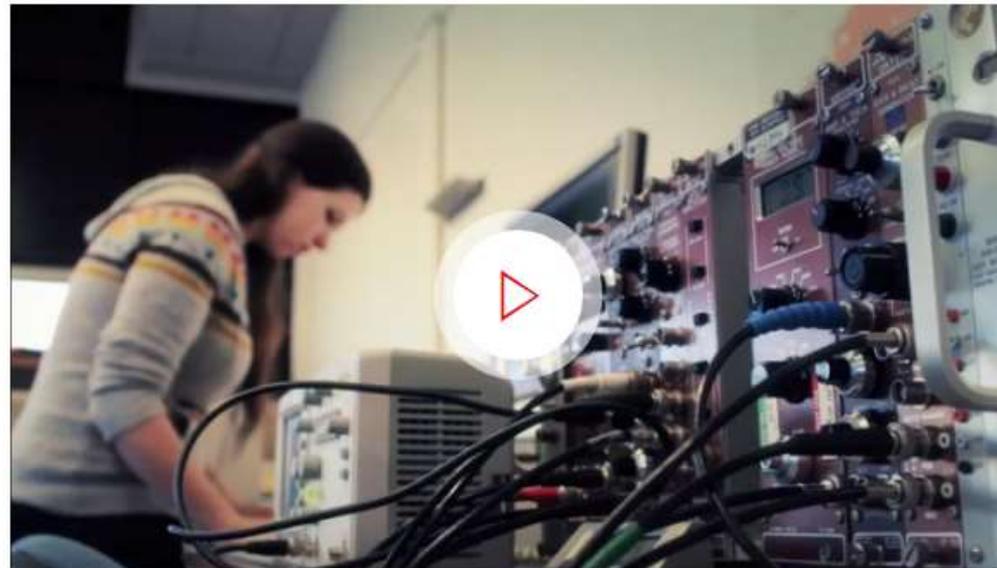
How was Juno created ?



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How Juno was created

IOP undertook a study of university physics departments around the UK over a two-year period (from 2003-2005). We wanted to find out what issues students and staff might be facing, and to understand how we could help. The issue cited most often by all the institutions surveyed was the lack of recruitment, retention and progression of women, an issue also prevalent in the broader world of physics. As a result of this research, Project Juno was created.



Video

Six Principles



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Six principles

Six principles form the criteria against which applications for Juno status are assessed.

[Read the six principles](#) >

- 6
5 principles those joining agree to progress towards meeting:
- Principle 1: Organisational Framework
 - Principle 2: Appointment and Selection
 - Principle 3: Career Progression and Promotion
 - Principle 4: Working Culture and Workload Allocation
 - Principle 5: Flexible Working
 - + • Principle 6: Professional Conduct, Harassment and Bullying

Project Juno



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3 levels

- Supporter
- Practitioner
- Champion



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Juno Practitioner

IOP | Institute of Physics
Juno Supporter

IOP | Institute of Physics
Juno Champion

IOP | Institute of Physics
Juno Champion

Six Principles & Juno Levels



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There are ~~five~~ ^{Six} **principles** and key actions that form the criteria against which applications for Juno champion status are assessed.

To achieve the **Juno Practitioner** award:

need to **establish and evidence** where you currently are in relation to embedding the principles and meeting the key criteria in each.

Be able to demonstrate how you meet **Principle 1**.

To be recognised as a **Juno Champion**:

need to **embed the six Juno Principles throughout your department**.

Have to demonstrate how you meet all principles and key criteria in each.

IOP | Institute of Physics
Juno Champion



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Project Juno



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Juno Practitioner

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Juno Supporter

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Juno Champion

38 UK Universities involved

<http://www.iop.org/policy/diversity/initiatives/juno/index.html>

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Juno Champion

Juno Champions



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2012

Physics, University of Cambridge

Physics and Astronomy, University of Glasgow

Physics, Imperial College London

Physics, Royal Holloway University of London

Physics, University of Warwick

Physics, University of York



2022

- Physics and Astronomy, University of Birmingham
- Physics, University of Cambridge
- Physics and Astronomy, Cardiff University
- Physics, Durham University
- Physics and Astronomy, University of Edinburgh
- Physics and Astronomy, University of Exeter
- Physics and Astronomy, University of Glasgow
- Physics, Astronomy and Maths, University of Hertfordshire
- Physics, King's College London
- Physics and Astronomy, University College London
- Physics, University of Lancaster
- School of Physics and Astronomy, University of Manchester**
- Physics and Astronomy, University of Nottingham
- Physical Sciences, The Open University
- Physics, University of Oxford
- Physics and Astronomy, Queen Mary University of London
- Mathematics and Physics, Queen's University Belfast
- Physics, Royal Holloway University of London
- Physics and Astronomy, University of Southampton
- Physics and Astronomy, University of St Andrews
- Physics, University of Warwick
- Physics, University of York

Juno Practitioners



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2012



2022

Physics and Astronomy, University College London

Physics and Astronomy, University of Edinburgh

Physics, University of Lancaster

Physics and Astronomy, University of Manchester

Physics and Astronomy, The Open University

.....

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Juno Practitioner

- Armagh Observatory and Planetarium
- Physics, University of Bristol
- Institute of Astronomy, University of Cambridge
- Physics, University College Dublin
- Physics, National University of Ireland Galway
- Physical Sciences, University of Kent
- Physics and Astronomy, University of Leeds
- Physics and Astronomy, University of Leicester
- Physics, University of Limerick
- Astrophysics Res. Institute, Liverpool John Moores Univ.
- Physics, Imperial College London
- Space and Climate Physics, UCL Mullard Space Sci. Lab.
- Physics, Loughborough University
- The National Physical Laboratory (NPL)
- Institute of Physics
- School of Computing, Sciences and Engineering, University of Salford
- Physics and Astronomy, University of Sheffield
- Physics, University of Surrey
- Physics, Swansea University

Juno Supporters



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2012

School of Physics and Astronomy, University of Aberdeen
Department of Physics, University of Birmingham
Department of Physics, University of Bristol
Department of Physics, University of Dundee
School of Physics and Astronomy, University of Durham
School of Physics, University of Exeter
Department of Physics, Heriot-Watt University
Department of Physics, King's College London
Department of Physics and Astronomy, University of Leicester
Department of Physics, University of Liverpool
School of Physics, National University of Ireland Galway
School of Physics and Astronomy, University of Nottingham
Department of Physics, University of Oxford
Department of Physics, Queen Mary University of London
School of Mathematics and Physics, Queen's University Belfast
School of Physics and Astronomy, University of St Andrews
School of Computing, Science and Engineering, University of Salford
Department of Physics, University of Strathclyde
Department of Physics and Astronomy, University of Sussex
Department of Physics, Swansea University
Physics Subject Development Group, University of the West of Scotland



2022

- Department of Physics, Aberystwyth University
- EPSRC C. for Doct. Training in New and Sustainable Photovoltaics (comprised of seven universities)
- School of Physical Sciences, Dublin City University
- Dublin Institute for Advanced Studies, and its School of Cosmic Physics and Theoretical Physics
- Fraunhofer UK Research Ltd and Fraunhofer Centre for Applied Photonics
- School of Chemical and Physical Sciences, Keele University
- School of Mathematics and Physics, Univ. of Lincoln
- Department of Physics, University of Liverpool
- Physics, National University of Ireland Maynooth
- Instit. of Cosmology and Grav., Univ. of Portsmouth
- School of Maths and Physics, Univ. of Portsmouth

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Juno Supporter

Six Principles



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 - + • *Principle 6: Professional Conduct, Harassment and Bullying*

Six Principles



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1. A robust organisational framework to deliver equality of opportunity and reward

1.1. Establish organisational framework

1.1.1. Evidence of senior management commitment

1.1.2. Effective consultation, communication, monitoring, evaluation and reporting mechanisms

1.1.3. Clear accountability for implementation and resources allocated (time and money)

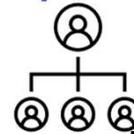
1.2. Monitoring and evidence base

1.2.1. Monitor over time, quantitative data by gender: All student admissions and performance

All staff applications, shortlists, appointment and promotion, looking at the proportion of women at each stage

1.2.2. Obtain qualitative data from staff

1.2.3. Identify any discrepancies in gender representation and/or progression and identify factors that might be causing them



Six Principles



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2. Appointment and selection processes and procedures that encourage men and women to apply for academic posts at all levels

2.1. Ensure that processes and procedures are fully inclusive

2.1.1. Ensure career breaks are taken into consideration

2.1.2. Gender awareness included in training for all staff who interview

2.1.3. Provide induction for all new staff, including research assistants, on appointment

2.2. Take positive action to encourage under-represented groups to apply for jobs

2.2.1. Monitor applications, shortlists and appointments, looking at the proportion of women (internal and external) at each stage

2.2.2. Identify any discrepancies and investigate why this might be the case, taking action as necessary

Six Principles



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3. Departmental structures and systems which support and encourage the career progression and promotion of all staff and enable men and women to progress and continue in their careers

3.1. Transparent appraisal and development

3.1.1. Appraise all staff, including researchers and PDRAs

3.1.2. Mentoring scheme in place with training and guidance available for both mentors, mentees

3.1.3. Ensure all staff, including PDRAs, have access to impartial career guidance



3.2. Transparent promotion processes and procedures

3.2.1. Ensure promotions process is transparent and fair to all staff at all levels, including those who have had a career break

3.2.2. Ensure all staff are aware of promotion criteria and process and the support available to them throughout the process

3.2.3. Take steps to identify and encourage potential candidates for promotion



Six Principles



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4. Departmental organisation, structure, management arrangements and culture that are open, inclusive and transparent and encourage the participation of all staff

4.1. Promote an inclusive culture

4.1.1. Ensure departmental processes, procedures and practices are fully inclusive

4.1.2. Gender awareness included in the training for all staff and demonstrators

4.1.3. Promote inclusive social activities and other opportunities for mutual support and interaction

4.1.4. Use positive, inclusive images in both internal and external communications

4.1.5. Encourage and support female seminar speakers



4.2. Transparent work allocation model

4.2.1. Recognise the full range of types of contribution and departmental role, including administration, welfare and outreach activities

4.2.2. Ensure all staff are aware of the criteria used to develop the model and that the allocation is transparent



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5. Flexible approaches and provisions that enable individuals, at all career and life stages, to optimise their contribution to their department, institution and to SET

5.1. Support and promote flexible working practices

5.1.1. Clear support from Head of Department for flexible and part-time working

5.1.2. Consistently applied policy on part-time and flexible working

5.1.3. Promote the benefits of flexible working for both men and women, particularly for those with caring responsibilities

5.1.4. Explicit support for those returning from career breaks or maternity leave

5.1.5. Encourage take up of paternity and other caring leave



Six Principles



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6. Bully and Harassment: An environment where professional conduct is embedded into departmental culture and behaviour



6.1. Ensure that all staff and students are aware of expected professional conduct.

6.2. Address bullying, harassment and misconduct

- 6.2.1. Ensure all staff and students are aware of how complaints of bullying, harassment or other misconduct will be dealt with through an enforceable formal policy.
- 6.2.2. Ensure there is a transparent reporting mechanism within the department to address any complaints.

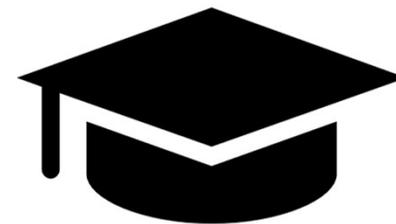


5 year reflection 2012 → 2017



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- Students
- Staff



5 year reflection 2012 → 2017



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In 2017/18, a total of
24% of physics students were female,
up from
21% in 2012/13.



A greater proportion of physics students from outside of the UK were female (31%)

than their UK-domiciled counterparts (22%)



There were
38% more female physics undergraduate students
in 2017/18 than in 2012/13.



Female undergraduate physics students achieved marginally higher degree classes

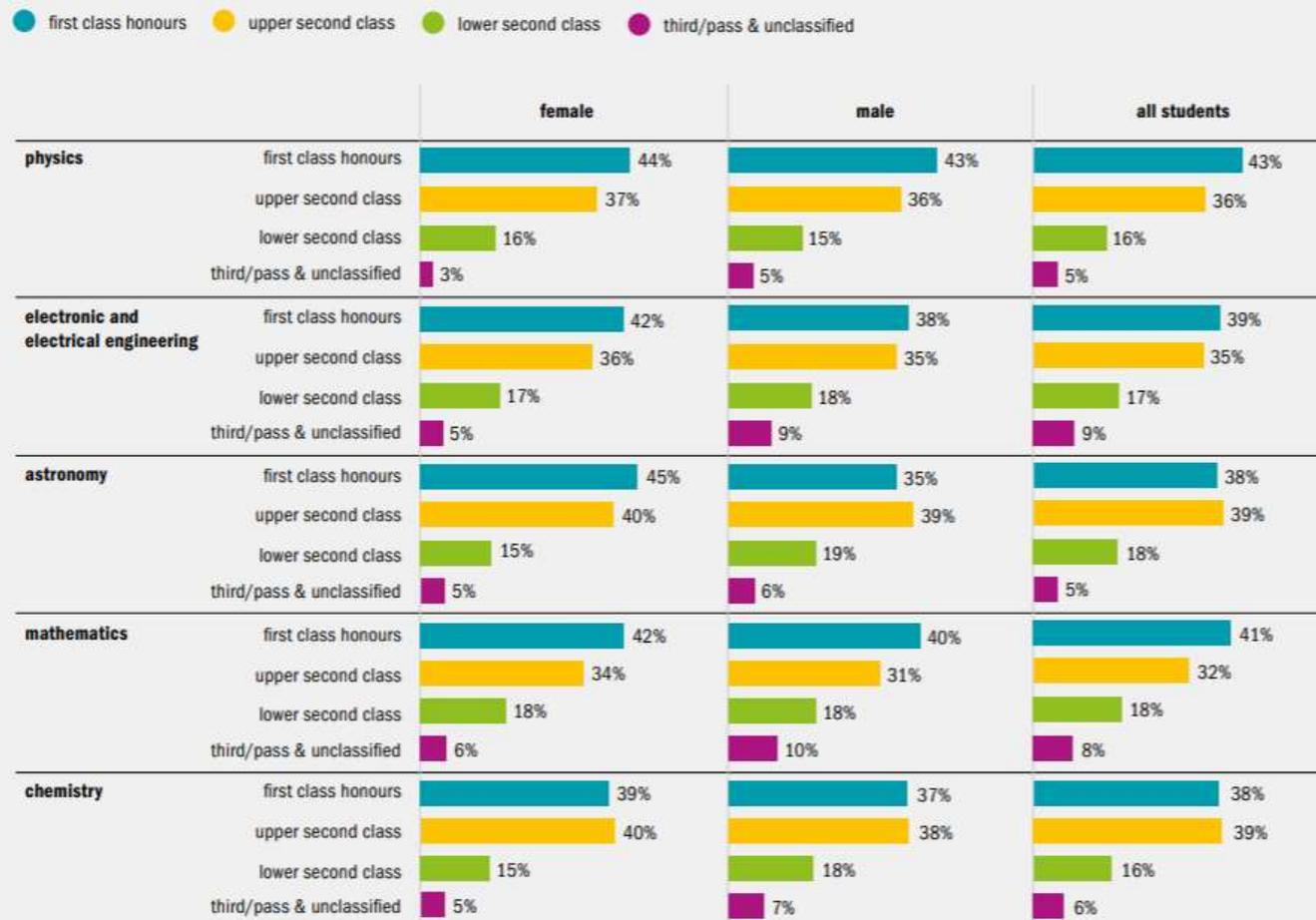
than their male counterparts.



Degree class achieved by graduates from undergraduate courses in 2017/18, by gender



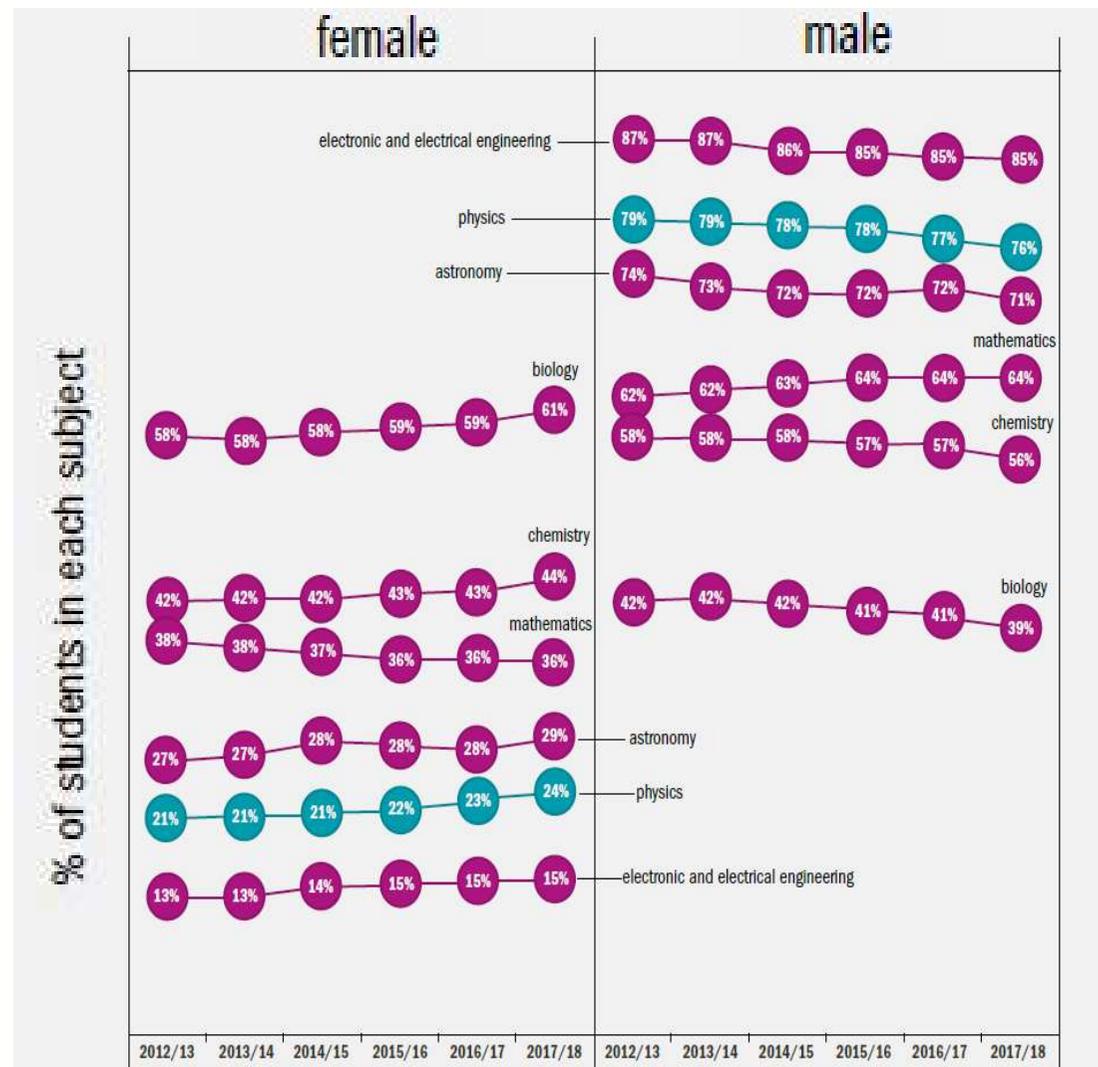
Degree class achieved by graduates from undergraduate courses in 2017/18, by gender



Undergraduate Numbers



- Physics has had the largest increase in female UG students of the six subjects compared in UK universities since 12/13
- 38% more female UG students in 17/18 than in 12/13.
- 29% increase in female PhD students over the same period.
- Number of female master's students however fell by 4%.



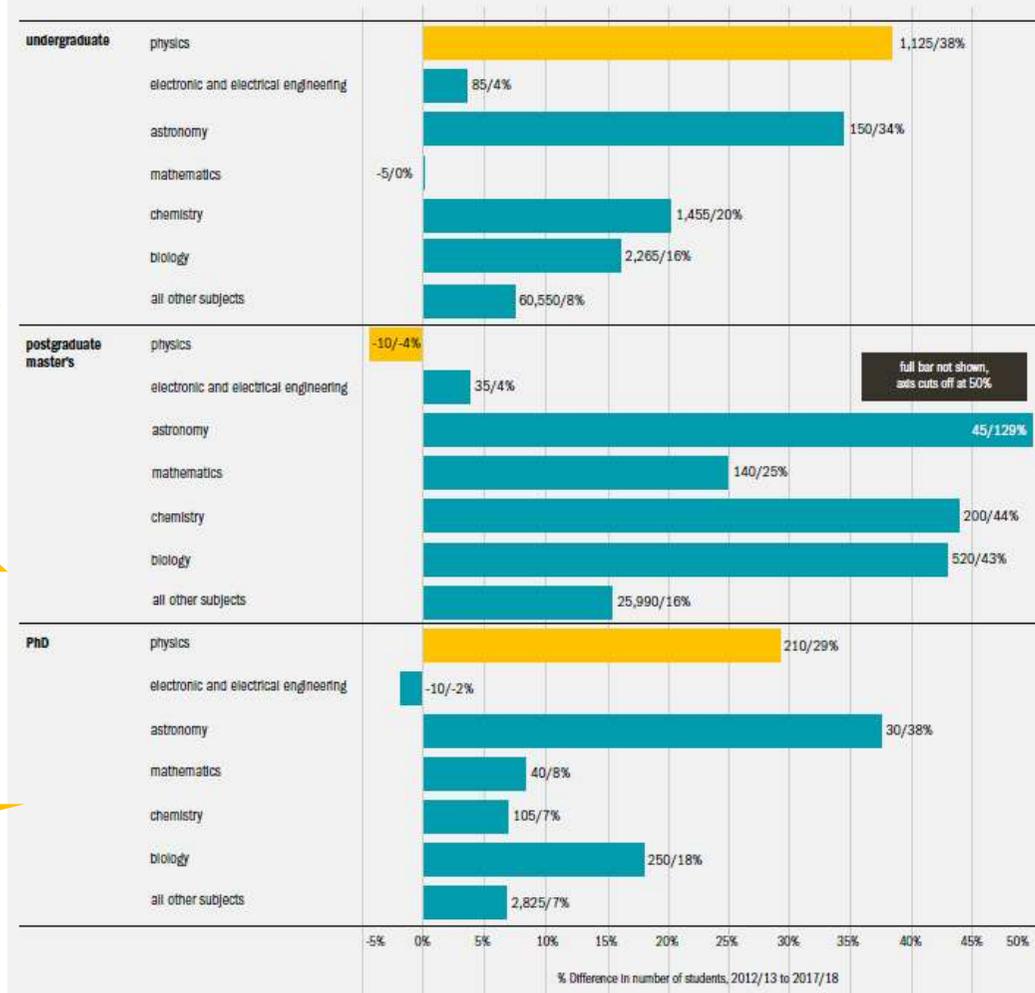
Growth in Female UG Student Numbers



- Physics has had the largest increase in female UG students of the six subjects compared in UK universities since 2012/13;
- 38% more female undergraduate students in 2017/18 than in 2012/13.
- 29% increase in female PhD students over the same period.
- Number of female master's students however fell by 4%.



Growth in number of female students in 2017/18 relative to 2012/13, by subject and level of study



% Female UG, PG M, PhD



Gender of students by subject and level of study, 2017/18

● male ● female ● other

subject	2017/18			2017/18		2017/18		2017/18	
	undergraduate	postgraduate master's	PhD	undergraduate	postgraduate master's	postgraduate master's	PhD	PhD	PhD
physics	17,440	865	3,735	77%	23%	73%	26%	75%	25%
electronic and electrical engineering	19,105	4,000	2,805	87%	13%	77%	23%	80%	20%
astronomy	1,975	325	380	70%	30%	76%	24%	71%	29%
mathematics	34,140	2,120	2,055	63%	37%	67%	33%	74%	25%
chemistry	19,360	1,295	4,025	55%	45%	49%	51%	60%	40%
biology	26,380	2,895	2,960	39%	61%	40%	60%	45%	55%
all other subjects	1,503,325	333,175	85,790	43%	57%	42%	58%	48%	51%



No loss in number of females from UG to PhD



Academic Staff



- Postdoctoral research staff: 79% male 21% female



- Academic staff in physics: 82% male 18% female



Professors: 89 % male 11 % female



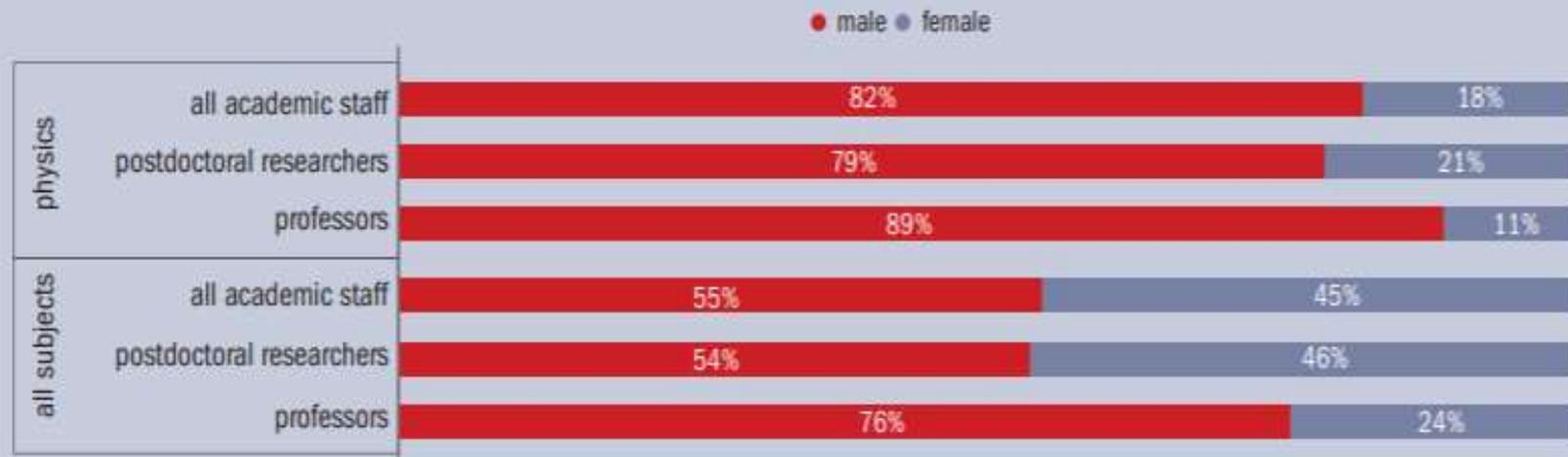
Up from
5.4 % in 2010



Comparison with other subjects



Staff in UK universities by gender – physics and all subjects



- Gender split in physics for postdoctoral researchers is similar to undergraduate, master's and PhD students.
- Gender split is wider for professors than for all academic staff in physics and for all subjects as a whole.

What can we do?



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- Minorities are more disadvantaged by bad practice
- Follow Juno Principles
- Create support groups: Women, Postgraduate, Research Fora
- Support minority staff to attain positions of esteem
- Ensure fair and transparent workload model
- Females sometimes seen as good citizens/ admin overload
- Encourage females to stand for leadership positions
- Encourage Females to carve out time for research and grants
- Ensure promotion criteria are clear and transparent
- Advertise role models/visibility
- Beware of unconscious bias in e.g. recruitment/promotion

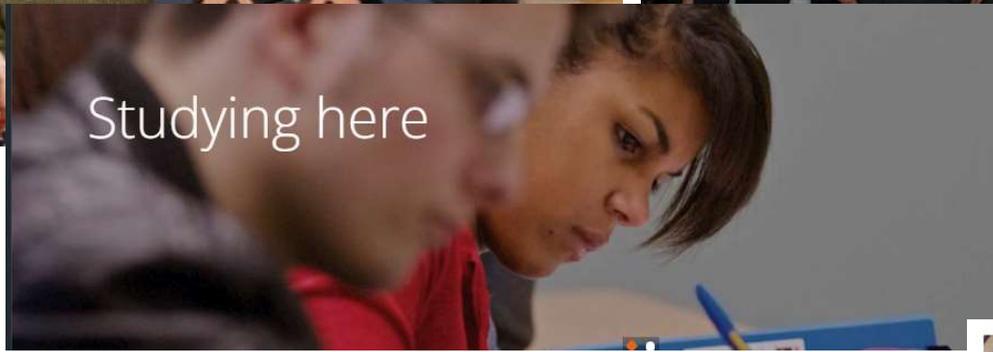
What a Physicist Looks Like



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and Diversity



Studying here



Department Physics



Why choose physics?

Women In Physics Group



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2012



2021



women **P**hysics

RHUL

women in physics



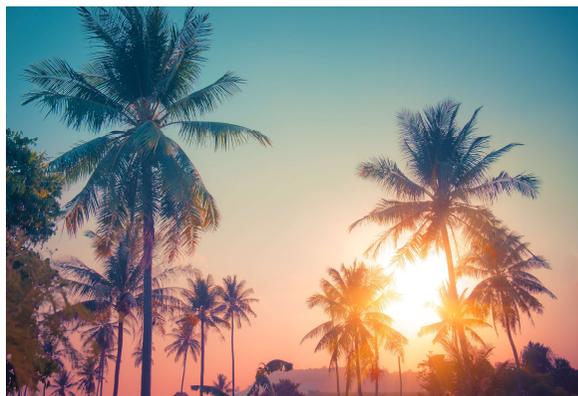
Conclusion



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- Numbers and % of female physics students have increased
- Still progress to be made in increasing % of female professors

Support and encourage everyone,
especially minority groups who may feel more isolated



References



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<https://www.iop.org/sites/default/files/2020-07/Student-characteristics-2017-18.pdf>

<https://www.iop.org/sites/default/files/2019-10/Academic-staff-UK-physics-dept.pdf>



Thanks for listening - any questions?

Academic Staff



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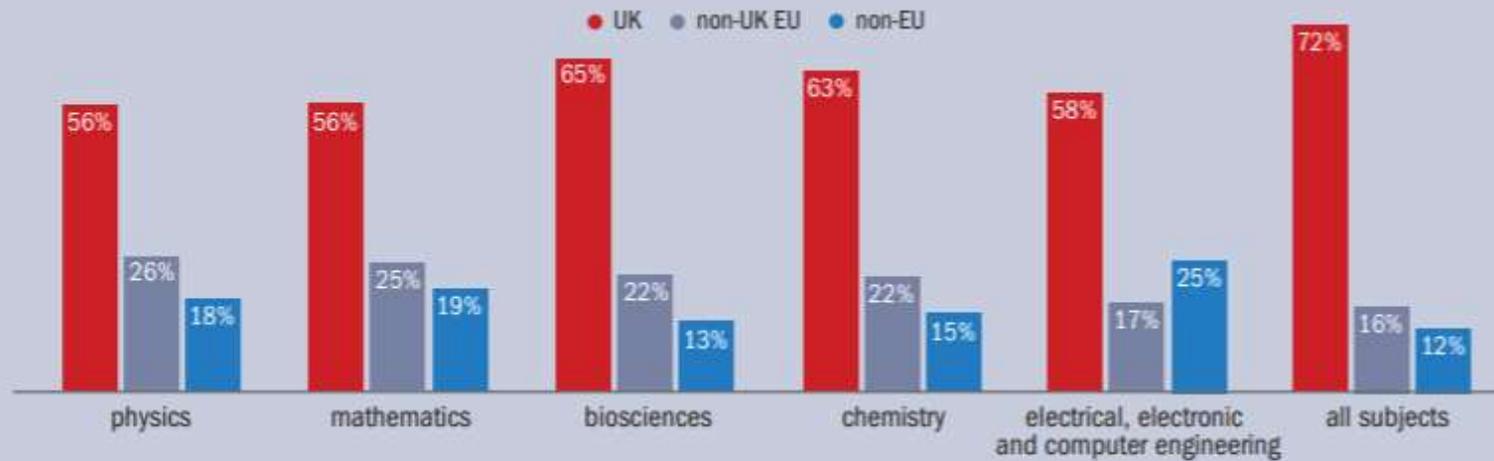
- 18% of professors in UK physics departments are from the EU and 10% are from outside the EU
- Less than 40% of postdoctoral research staff are from the UK: 31% are from non-UK EU countries and 30% are from outside the EU
- Across all subjects, 50% of postdoctoral research staff are from the UK, 27% from non-UK EU countries, and 23% from outside the EU



Comparison with other subjects



All academic staff in UK universities by subject and domicile



Comparison with other subjects

