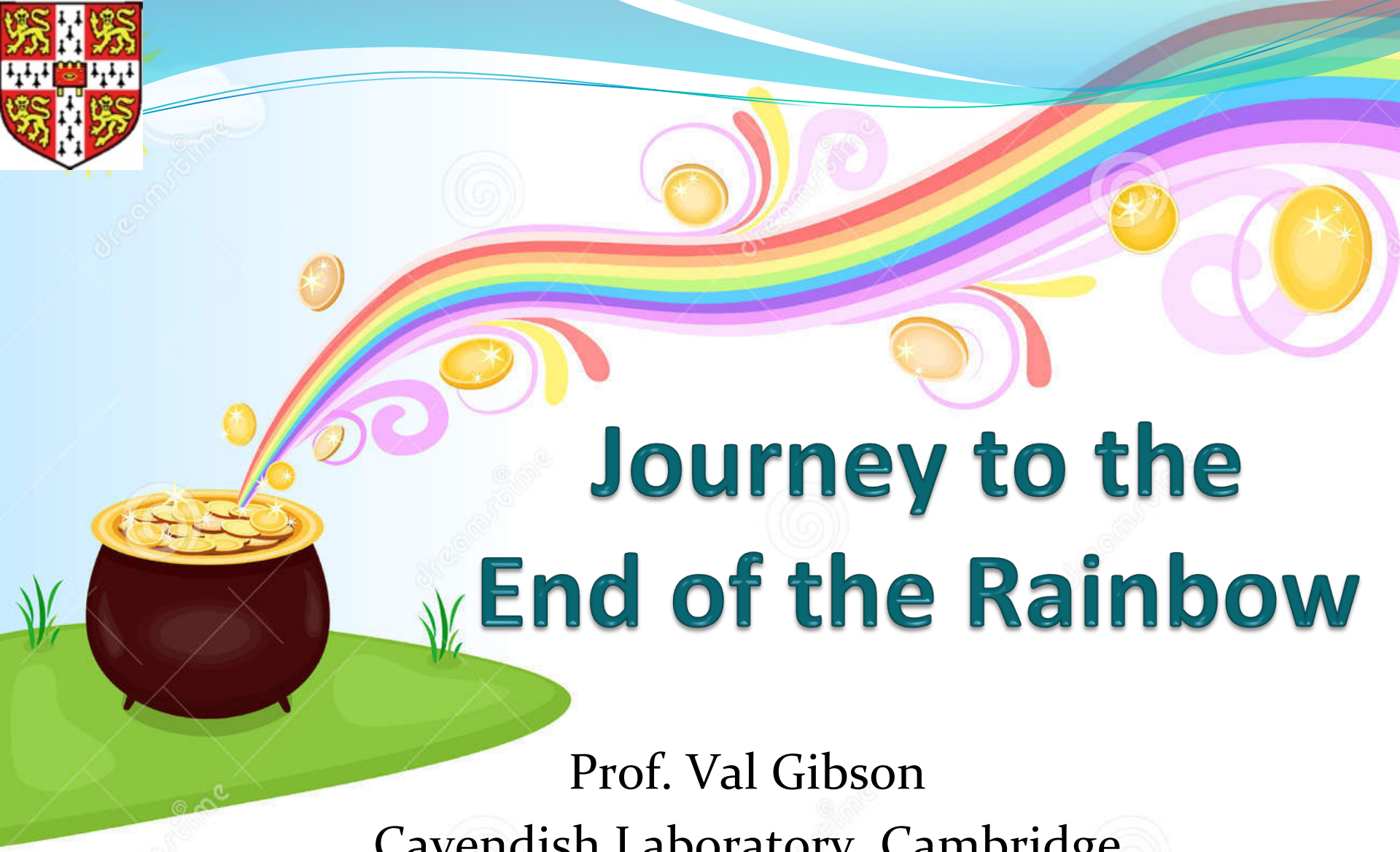


Journey to the End of the Rainbow

Prof. Val Gibson

Cavendish Laboratory, Cambridge

Athena SWAN Gold Award

IOP | Institute of Physics

Juno Champion

Where it all started for me ….

Huntingtower Road Primary School

Where it all started for me ….

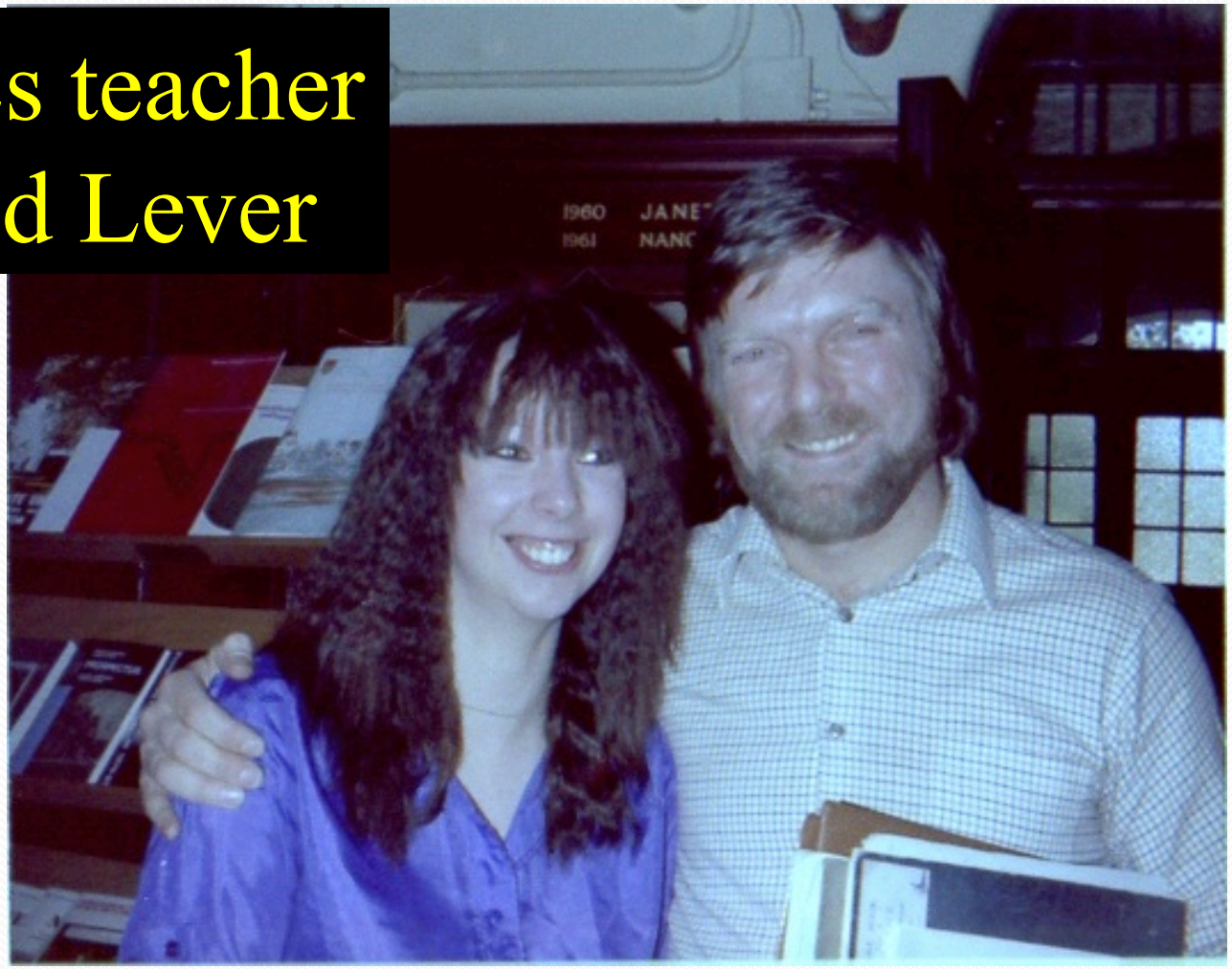
Huntingtower Road Primary School

Where it all started for me ….

Kesteven and Grantham Girls' School

Where it all started for me ….

Physics teacher
Mr Rod Lever



Kesteven and Grantham Girls' School

My Career in Science

1983
BSc Sheffield
CERN summer student

1980

1985

1990

1995

2000

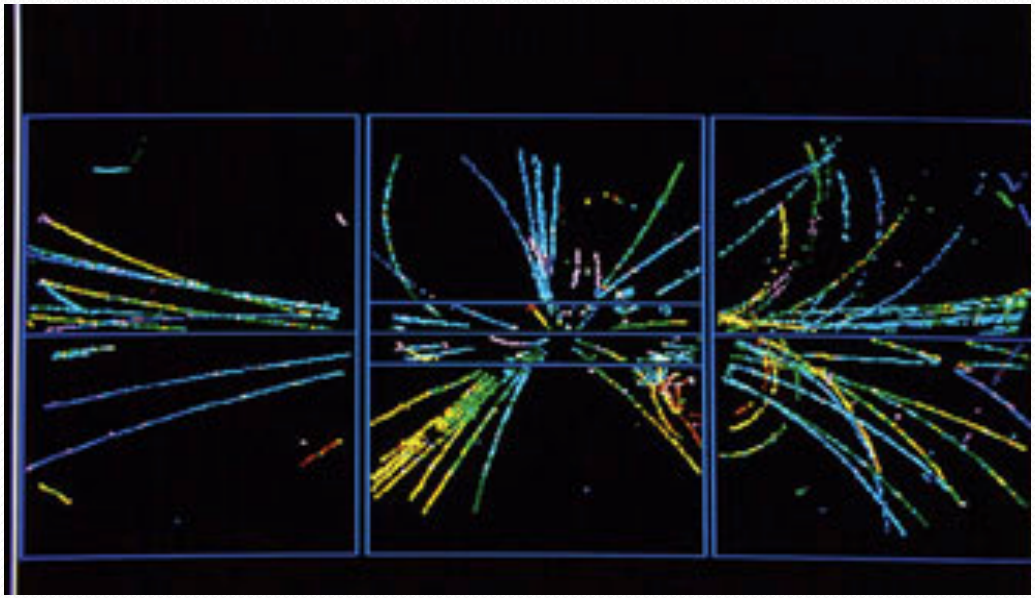
2005

2010

1983
Met my future husband,
Andy.

CERN Summer Student

CERN Summer Student



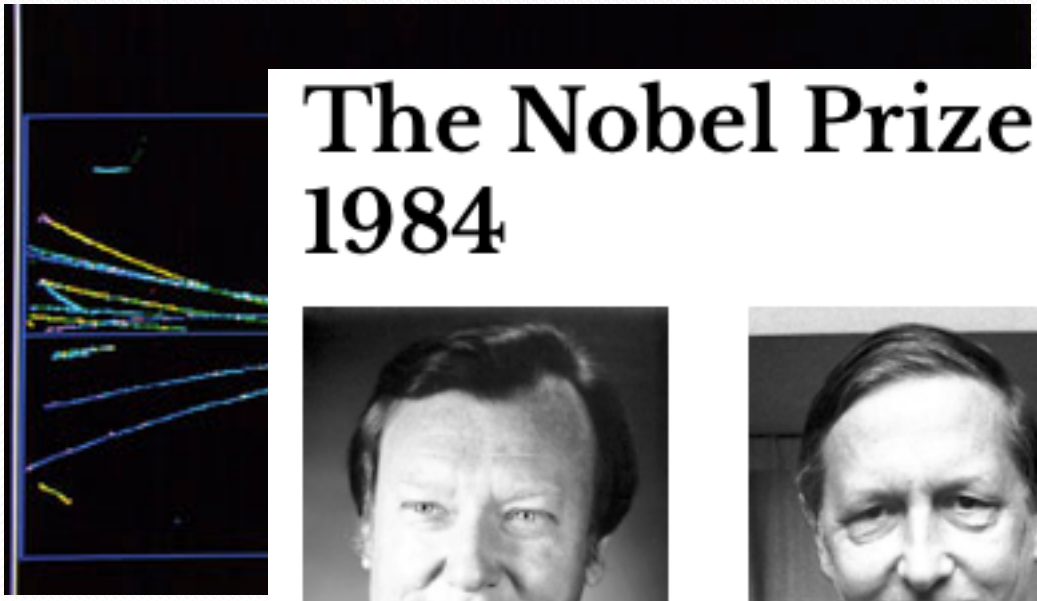
1983

Discovery of the $W^{\pm}$ boson

1984

Followed by the Z^0

CERN Summer Student



1983

$W^{\pm}$ boson

Z^0

The Nobel Prize in Physics 1984

Carlo Rubbia

Prize share: 1/2

Simon van der Meer

Prize share: 1/2

My Career in Science

1983
BSc Sheffield
CERN summer student

1986
DPhil, Queens College, Oxford

1987
CERN Fellow

1990
SERC Advanced Fellow
Stokes Senior Research Fellow, Pembroke College

1994
University Lecturer
Fellow Trinity College

2006
University Reader

2009
University Professor
Senior Lecturer Trinity

1980

1985

1990

1995

2000

2005

2010

1983
Met my future husband, Andy.

1993
Got married

1998
Daughter Milly born

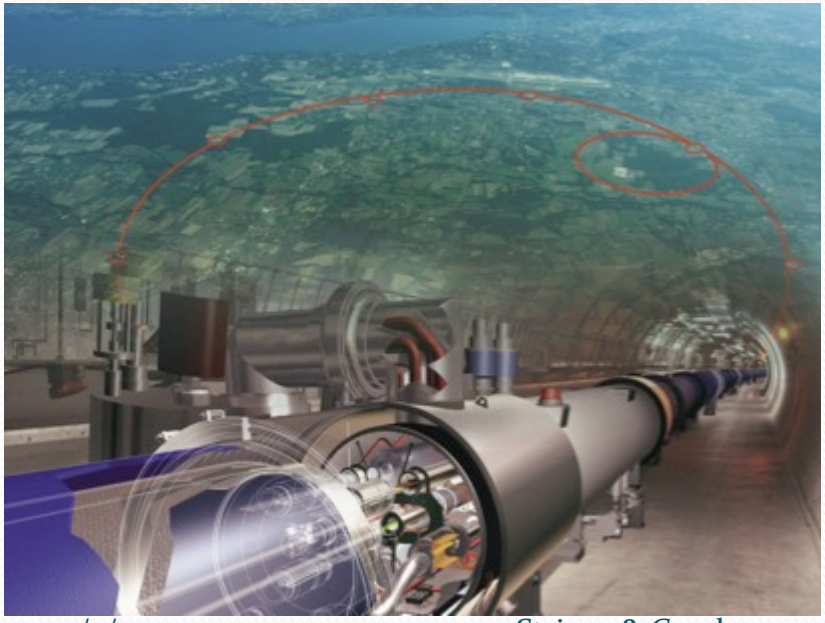
2002
Daughter Lucy born

My Greatest Personal Achievement

A snapshot of my work

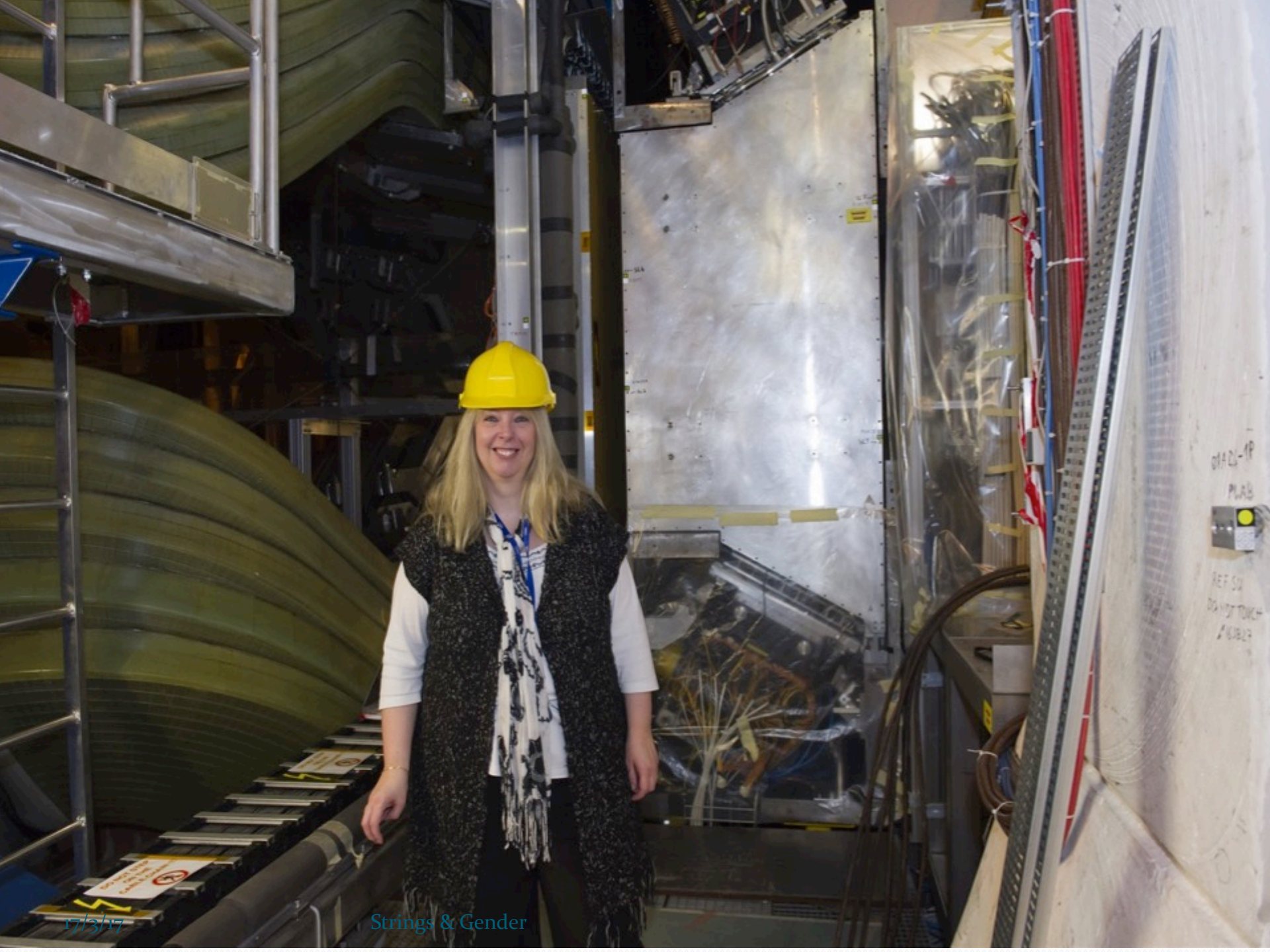
The Cavendish Laboratory

Head of High Energy Physics
Lecturer, final year projects,
Examiner…



CERN

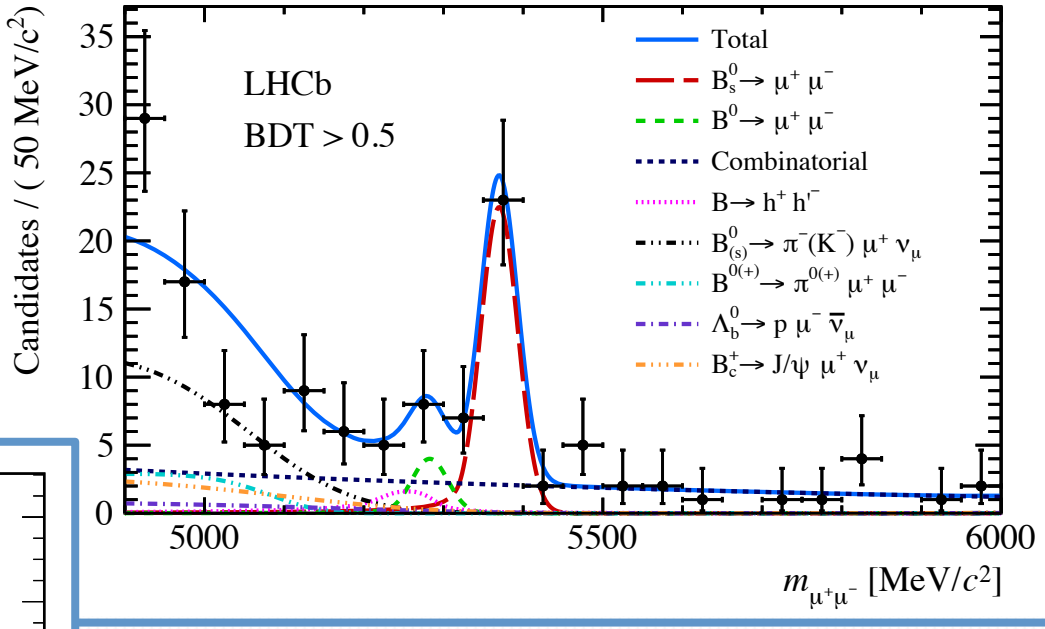
The Large Hadron Collider (LHCb)
Matter- antimatter asymmetries
Search for new physics

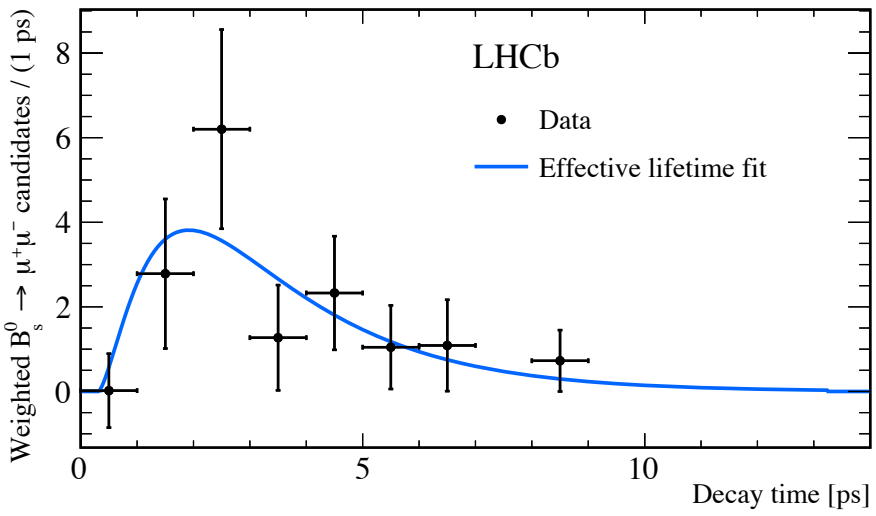


Measurement of the $B_s^0 \to \mu^+\mu^-$ branching fraction and effective lifetime and search for $B^0 \to \mu^+\mu^-$ decays

LHCb: aiXiv: 1703.05747

First observation (7.8σ) of $B_s^0 \to \mu^+\mu^-$ in a single experiment.





$$B\left(B_s^0 \to \mu^+\mu^-\right) = \left(3.0 \pm 0.6\,^{+0.2}_{-0.1}\right) \times 10^{-9}$$

$$\tau\left(B_s^0 \to \mu^+\mu^-\right) = 2.04 \pm 0.44 \pm 0.05 \text{ ps}$$

A snapshot of my work

Trinity College

Senior Woman Fellow
Director of Studies
Admissions Officer
Undergraduate Supervisor

Equality & Diversity

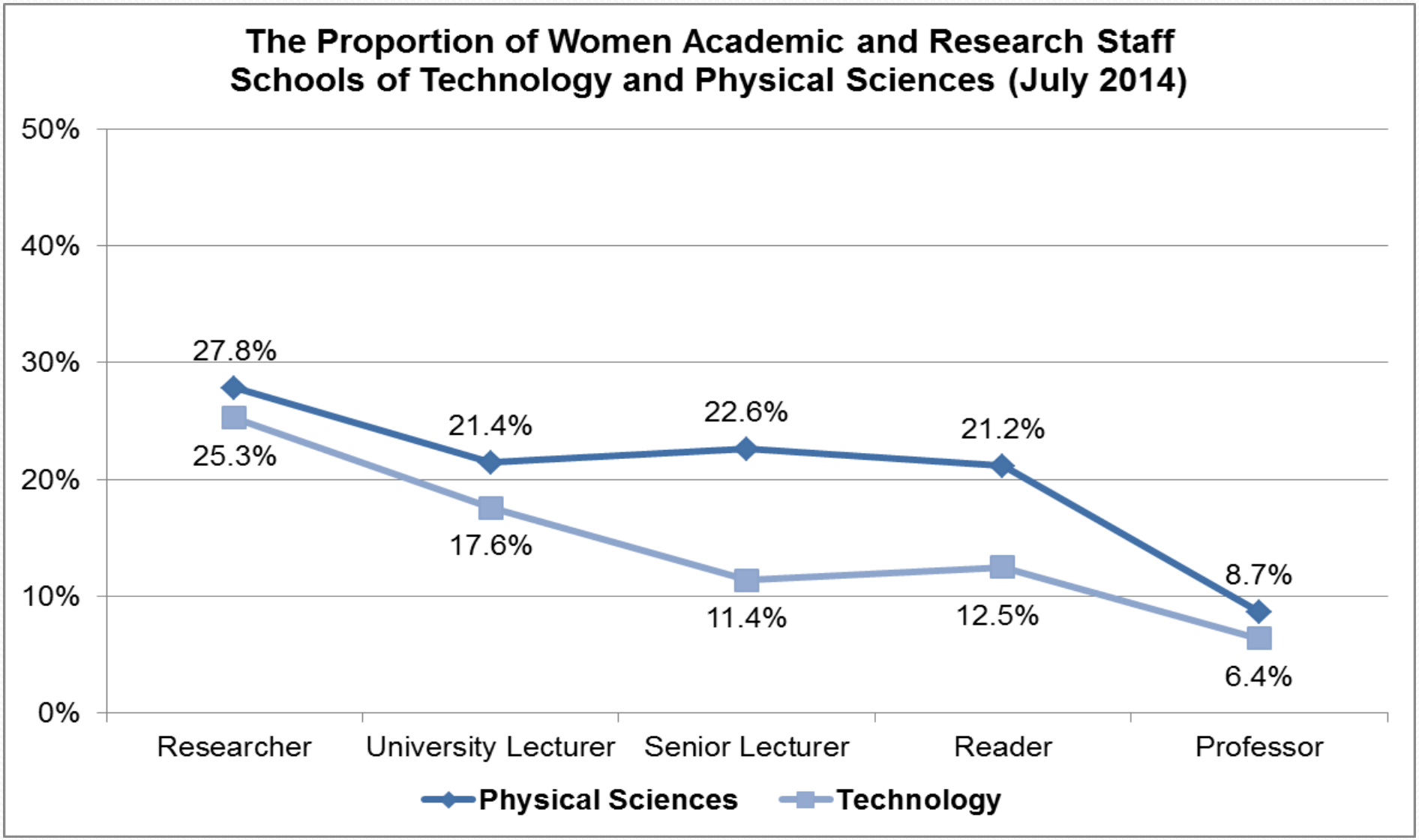
School E&D Champion
Chair School E&D Forum
Chair IoP Juno panel

UNIVERSITY OF CAMBRIDGE

The Proportion of Women Across All Career Stages (2014)

	AHSS	STEMM
Undergraduate students	58.0% N=3,183	35.6% N=2,240
Postgraduate students	51.5% N=2,640	36.1% N=1,512
Researcher	55.0% N=221	44.7% N=1,445
University Lecturer	45.1% N=105	23.4% N=49
Senior Lecturer	46.7% N=57	21.5% N=26
Reader	32.4% N=33	18.5% N=27
Professor	20.2% N=38	14.3% N=59

UNIVERSITY OF CAMBRIDGE



IoP Benchmarks

20% A2-level (& equiv.) physics students are women.

22% physics graduands are women.

21% researchers are women.

17% academic staff are women.

9% physics professors are women.

At the current rate of change (3% over 7 years), we could only reach 35% of women academic staff by 2050.

We need to do more….

Journey to Gold

Cambridge, Physics

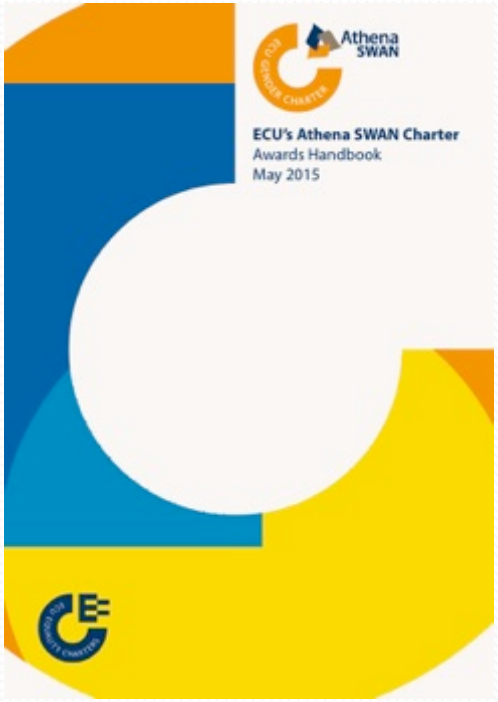
Mar 2003 Senior women discussions

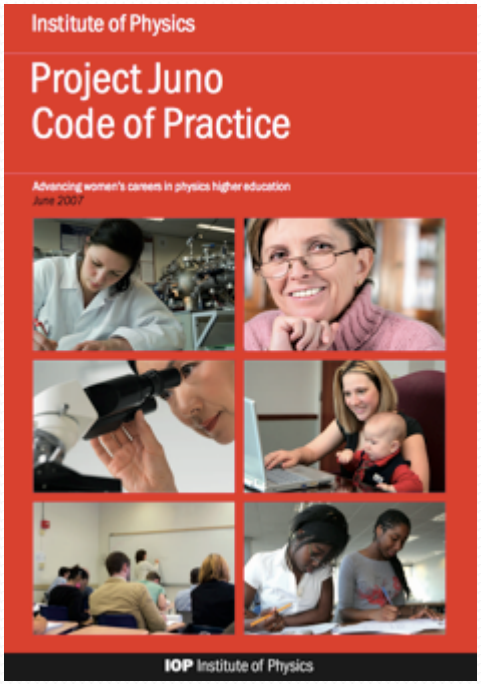
Nov 2003 IoP "Women in Physics" site visit

2004 Cavendish Personnel Committee established

Athena SWAN & IoP Juno

Athena SWAN & Project Juno Charters introduced in 2005 & 2007 to address the attraction and retention of women in science.





http://www.ecu.ac.uk/equality-charters/athena-swan/
http://www.iop.org/policy/diversity/initiatives/juno/index.html

Athena SWAN

2011: Letter to Medical Schools Council from Dame Sally Davies (Chief Medical Officer):

"..we do not expect to short-list any NHS/University partnership where the academic partner has not achieved at least the Silver Award of the Athena SWAN Charter for Women in Science."

May 2015: Athena SWAN charter expanded to recognise work undertaken in arts, humanities, social sciences, business and law (AHSSBL), and in professional and support roles, and for trans staff and students. The charter now recognises work undertaken to address equality more broadly.

Juno Principles

[1] A robust organizational framework to deliver equality of opportunity and reward.

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

[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.

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

[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.

Juno Awards

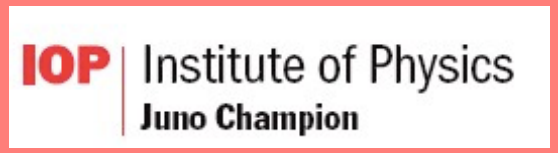
Supporter

Start the Juno journey by endorsing the 5 principles and make a commitment to work towards Practitioner and Champion.

Practitioner

Demonstrate that the Juno journey is well underway. Evidence is gathered and an initial action plan demonstrates how the department aims to achieve Champion.

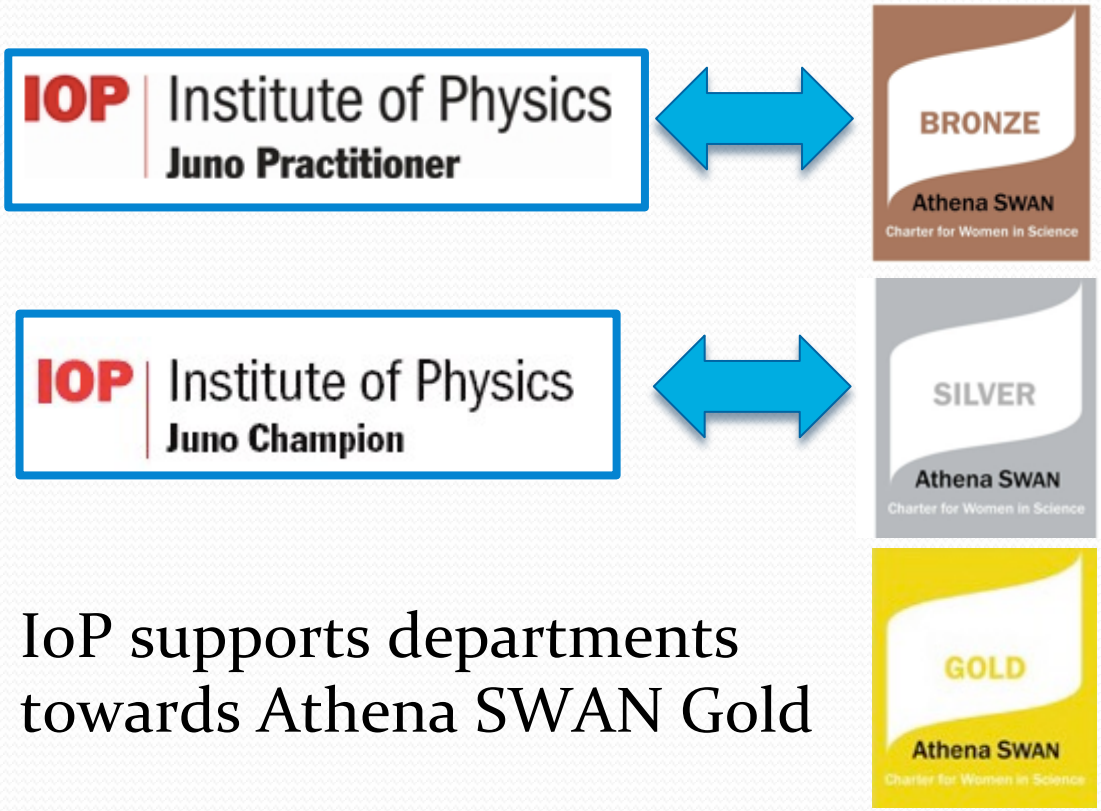
Champion



Demonstrate that the 5 principles are embedded throughout the department. Further evidence is gathered and the action plan demonstrates how the department will continue to further good practice.

Athena SWAN & IoP Juno

Commitment and progression recognised with reciprocal arrangement of awards schemes:



IoP supports departments towards Athena SWAN Gold

An Institute of Physics Report | **September 2016**

Journeying to the end of the rainbow?

A guide for Juno Champions working towards Athena SWAN Gold

IOP Institute of Physics

Benefits of Juno

Diversity team, Institute of Physics
76 Portland Place
London
W1B 1NT

+44(0)20 7470 4800
diversity@iop.org / juno@iop.org

- "By Physicists for Physicists"
- Juno panel members published

  Chair: Val Gibson (Cambridge)

  IoP team: Jenni Dyer & Angela Townsend

  10 members, 9 academic physicists, 1 industrial physicist

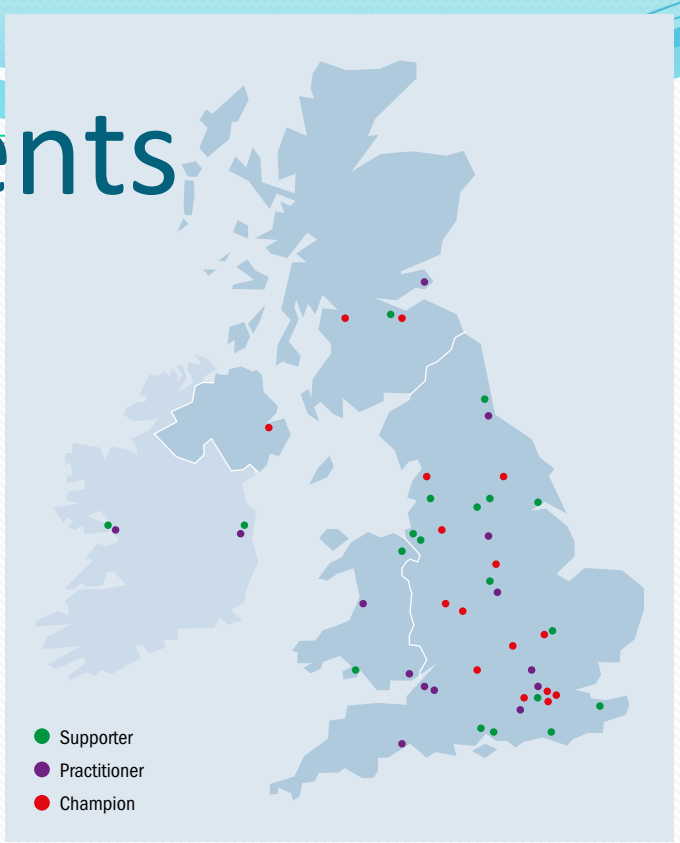
  http://www.iop.org/policy/diversity/initiatives/juno/panel/

- Panel interacts with Juno contacts and departments
- Site visits with comprehensive feedback
- Buddying /mentoring system with nearby departments

Juno is more than an awards scheme; it acts as a peer support network for physicists wishing to address gender equality.

AS & Juno departments

Juno	Athena SWAN
22 Supporters	
13 Practitioners	13 Bronze
13 Champions	14 Silver
	1 Gold
48 Departments	28 Departments



- 67% of departments engage with Juno first and then use their Juno awards to obtain Athena SWAN awards.
- Only 2/13 departments obtained Silver before Juno Champion.
- 5 UK and 5 Irish departments not engaged with AS or Juno.
- Juno also taken up by Research Institutes and external companies (e.g. Huddersfield, UKAEA, NPL).

Journey to Gold

Cambridge, Physics

Mar 2003 Senior women discussions

Nov 2003 IoP "Women in Physics" site visit

2004 Cavendish Personnel Committee established

2008 Join Project Juno & Athena SWAN schemes

2010 Juno Champion (2 applications)

IOP Institute of Physics Juno Champion

SILVER Athena SWAN

Athena SWAN Silver

Jun 2013 Juno Champion renewal

Nov 2013 Athena SWAN Gold (2 applications)

Athena SWAN Gold Award

Critical friends (e.g. IoP Juno panel) were key to success…

Cavendish awarded Athena Swan Gold Award

Main Activities

Cambridge, Physics

64% increase in number of women academics

All female academics, eligible for promotion, promoted at least once

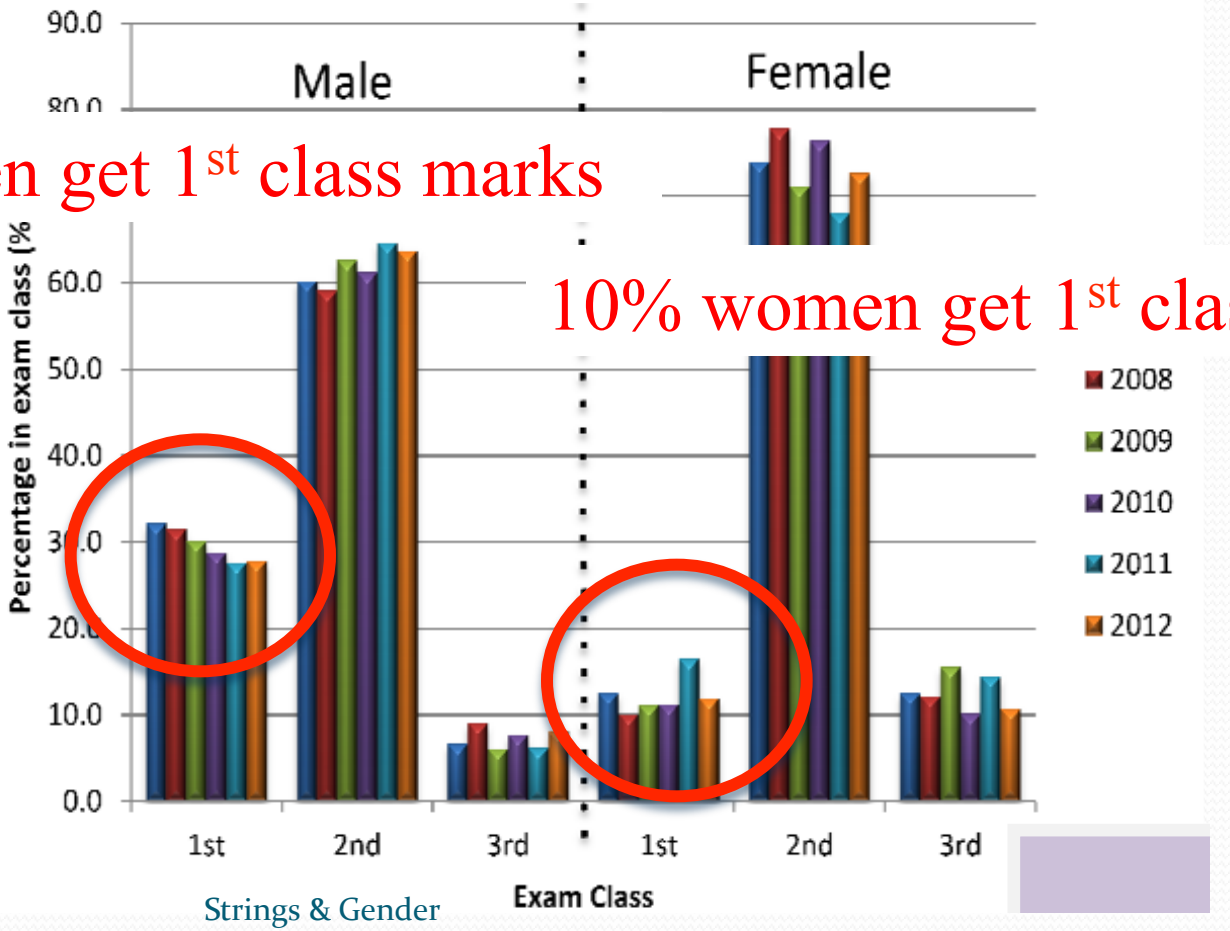
Mandatory for all staff to undergo E&D training

Research Staff Committee formed (very active); and significant expansion of career advice

Demonstrated positive impact from re-design of 1st year UG physics course; and action plan to address performance

Exam Performance

- Cambridge Natural Sciences course
- End of 1st year results: Physics



Physics Exam Project

- April 2014: Year 1 mock physics exam (funded by IoP)

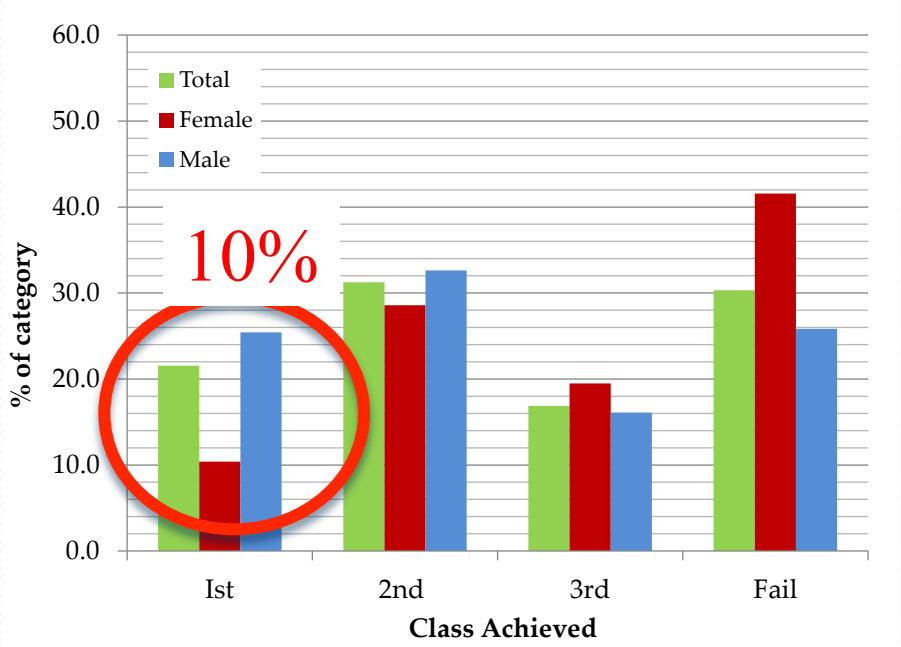
An Investigation into the Impact of Question Structure on the Performance of First Year Physics Undergraduate Students at the University of Cambridge.

Prof. Valerie Gibson, Dr. Lisa Jardine-Wright* & Elizabeth Bateman
University of Cambridge, Cavendish Laboratory, J J Thomson Avenue, CB3 0HE

- Published in Eur. J. of Physics 36 (2015) 045014.

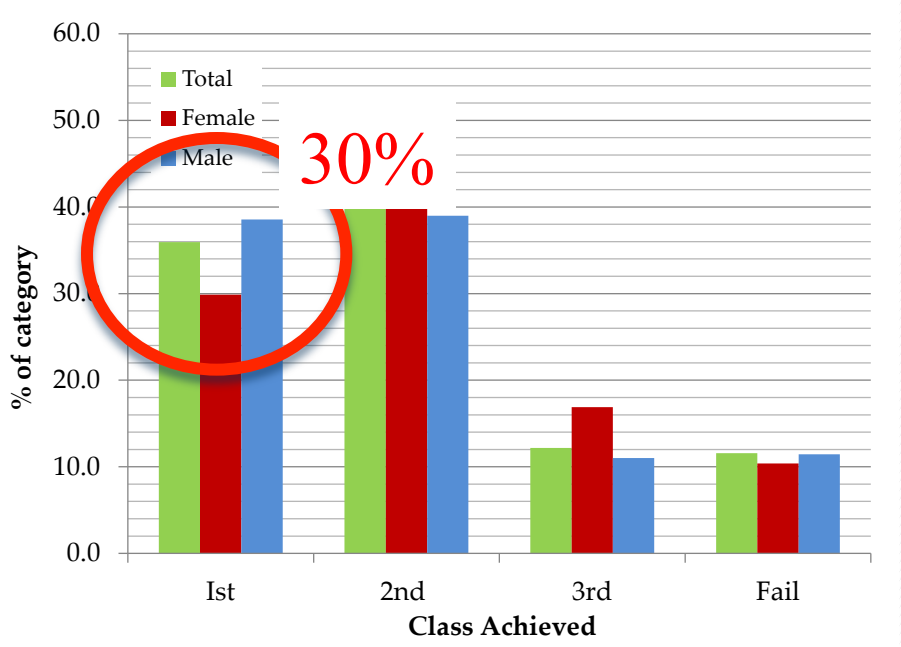
Physics Exam Project

"University" style



(a) University style.

"Scaffolded" style



(b) Scaffolded style.

- All students benefit; women preferentially.

Key findings

- No gender bias in performance at A2-level.
- Mock exam mark distribution confirms trend seen in end of year exams.
- "Scaffolded" questions improve performance of both genders from all school backgrounds, women benefitting preferentially.
- Correlation between A2-level and mock exam results reduced for scaffolded questions.
- Students with overseas, mixed environment and independent school education more likely to receive a first class mark in Year 1 (irrespective of gender).

Main Activities

Cambridge, Physics

64% increase in number of women academics

All female academics, eligible for promotion, promoted at least once

Mandatory for all staff to undergo E&D training

Research Staff Committee formed (very active); and significant expansion of career advice

Demonstrated positive impact from re-design of 1st year UG physics course; and action plan to address performance

Workload Model (adopted by other departments)

Cavendish Social Committee

Influential engagement with Athena SWAN activities at University & national levels

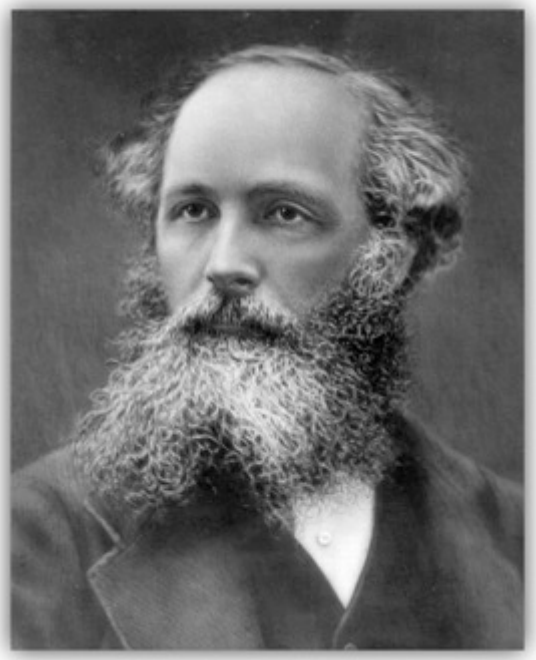
Changing culture….

The Cavendish Chairs

The Cavendish Laboratory (Department of Physics) at the University of Cambridge has 2 endowed chairs….

The Jacksonian Chair (est. 1782)

Isaac Milner



The Cavendish Chair (est. 1871)

James Clerk Maxwell

The Cavendish Chairs

The Cavendish Laboratory (Department of Physics) at the University of Cambridge has bought 2 chairs….

The Cavendish High Chairs (est. 2012)

The Cavendish Chairs

The Cavendish high chairs (& baby-changing facilities) established a culture that is accepting of life beyond work.

Challenge: Child policy within department

Other developments:

- Maternity/paternity mentoring (pre & post leave).
- Provision of childcare during appointment interviews.
- Workload reduction on return to work.
- University Returning Carers scheme.

Other Challenges Overcome

- Recognising the demographic trend towards increasing numbers of EU & overseas students and post-docs.
- Sense of belonging Early Career Researchers
  - Research Staff Committee, University OpdA
  - Mentoring
  - Career advice, CV & fellowship workshops, interview practice

- Academic community
  - Mandatory E&D training
  - Open & fair appointment processes
  - Workload model
- Culture & Communication

Lessons Learnt

- Patience: it takes about 10 years to change culture.
- Journey: it's about embedding good practice; not the awards.
- Commitment: needs commitment from all to deliver good practice and equality for all.
- Evaluate: use quantitative and qualitative data, focus groups and surveys to form an action plan.
- Surprises: identify pockets of good practice, as well as issues to be acted upon.
- Embed: good practice from the start and define responsibilities.
- Critical friends are key to success….

Our Values

Cavendish Athena SWAN Gold renewal due Apr 2018

Our Values

Cavendish Athena SWAN Gold renewal due Apr 2018

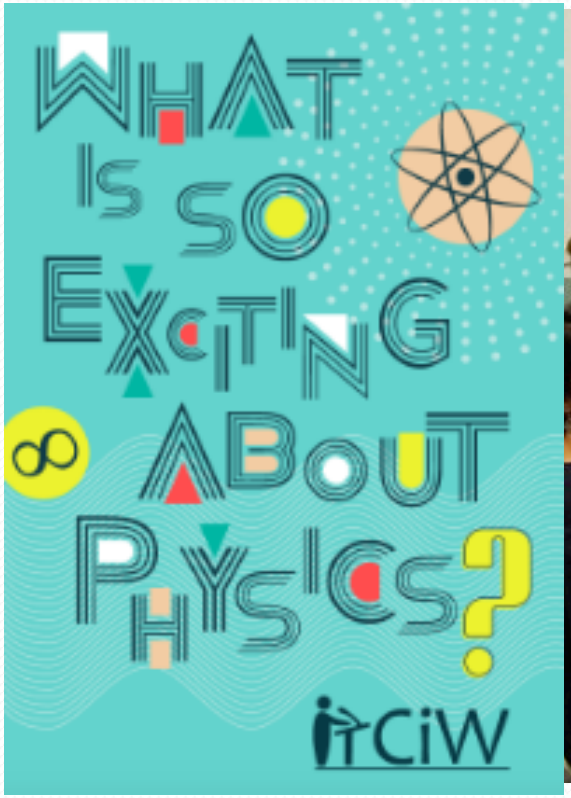
Consideration
treating others as we would like others to treat us;

Respect for all
showing respect for each other;

Helping others to excel
actively seeking ways to enable everyone to give of their best, regardless of their personal circumstances;

Supporting career aspirations
encouraging and supporting everyone in pursuing their career aspirations;

Recognising contribution
recognising everyone's contribution to the Department's success.



Cavendish Inspring Women (CiW)

Thank you