

Welcome and Introduction to Oxford Physics and Particle Physics

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Department of Physics

Daniela Bortoletto, Head of Particle
Physics





Welcome from the 513 professors, researchers and staff & 406 PhD students and 760 undergraduates in Oxford Physics (about 1600 people in total)



Oxford University



A collegiate university.

How it works:

The University is akin to the US Federal Government

The 43 Colleges are akin to the US States

All students and most academics are members of both a college and the university

11,700 Undergraduates

22,300 total students

Operating budget - ~£2 Billion

(~£0.7 Billion is research)

Endowment £11 Billion

Oxford is international

- We welcomed our first international student - Emo of Friesland - in 1190.
- 41% of Oxford students are not from the UK
- 63% of graduate students 19% of undergraduates.

- 48% of Oxford academics are from outside the UK
- 57 Nobel Prizes including 27 by our students

Students by country

Over 140 countries and territories are represented among the Oxford student body. The largest groups of international students are those from:

1. USA - 1,441
2. China (including Hong Kong and Macao) - 1,047
3. Germany - 837
4. India - 408
5. Italy - 378
6. Canada - 374
7. France - 299
8. Australia - 290
9. Singapore - 267
10. Poland - 222

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- 57 Nobel Prizes including 27 by our students
- Leader of the University Irene Tracy
- (the 273rd person to hold the post)

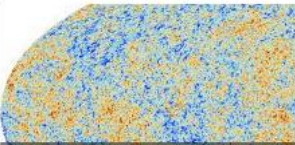


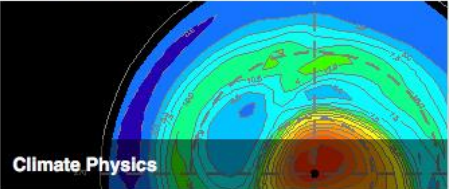
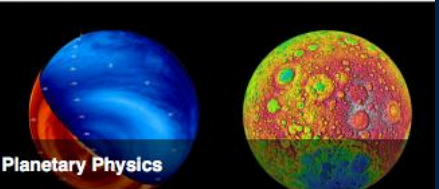
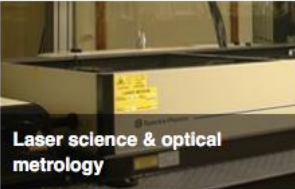
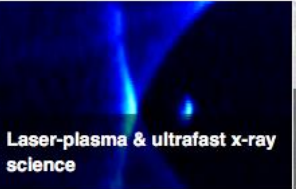
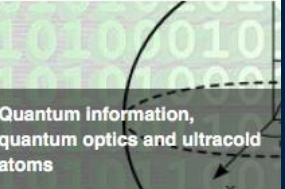

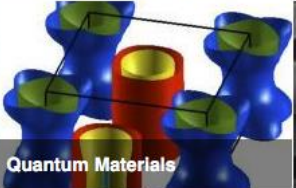
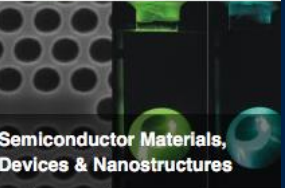
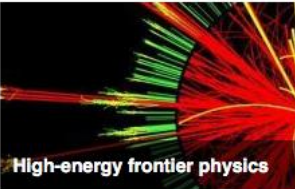
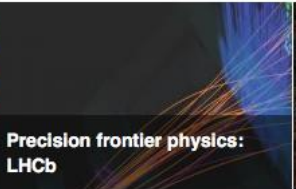







Department Profile

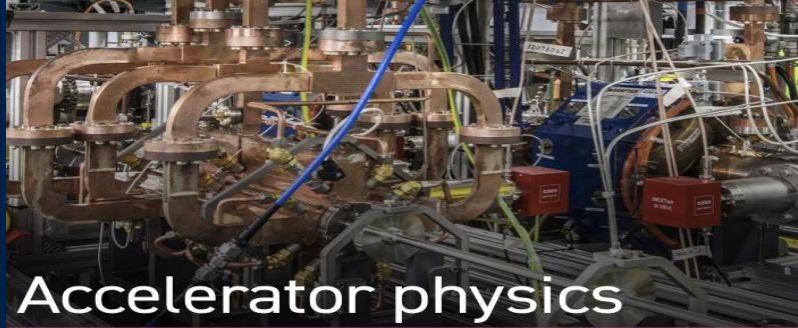
- One of the world's leading physics departments
- **Ranked #1 in UK in most recent national research excellence exercise (2022) & routinely in the top 10 globally**
- Important source of high-quality staff for academia and industry
- Goal to be #1 in the world in all areas of our activity

1	 Massachusetts Institute of Technology (MIT) Cambridge, United States	98.7
2	 Harvard University Cambridge, United States	96.9
3	 Stanford University Stanford, United States	96.4
4	 University of Cambridge Cambridge, United Kingdom	95.9
5	 University of Oxford Oxford, United Kingdom	94.8
6	 University of California, Berkeley (UCB) Berkeley, United States	94.7
7	 California Institute of Technology (Caltech) Pasadena, United States	94.4
8	 Princeton University Princeton, United States	92.2



Astrophysics	 Cosmology	 Galaxies & Black Holes	 Instrumentation
Atmospheric, Oceanic and Planetary Physics Studying physical processes in atmospheres and oceans of the Earth and other planets.	 Climate Physics	 Planetary Physics	
Atomic and Laser Physics Light-matter interaction from high-energy plasmas to ultracold matter and single quantum particles	 Laser science & optical metrology	 Laser-plasma & ultrafast x-ray science	 Quantum Information, quantum optics and ultracold atoms
Condensed Matter Physics Exploring the quantum nature of materials and the physics of biological systems	 Biological Physics	 Quantum Materials	 Semiconductor Materials, Devices & Nanostructures
Particle physics	 High-energy frontier physics	 Precision frontier physics: LHCb	 Accelerator Neutrinos
Rudolf Peierls Centre for Theoretical Physics Theory for all branches of Physics	 Condensed Matter Theory	 Particle Theory	 Theoretical Astrophysics & Plasma Physics
Interdepartmental The physics department is also the base for the following groups	 John Adams Institute for Accelerator Science		

Science themes



Accelerator physics



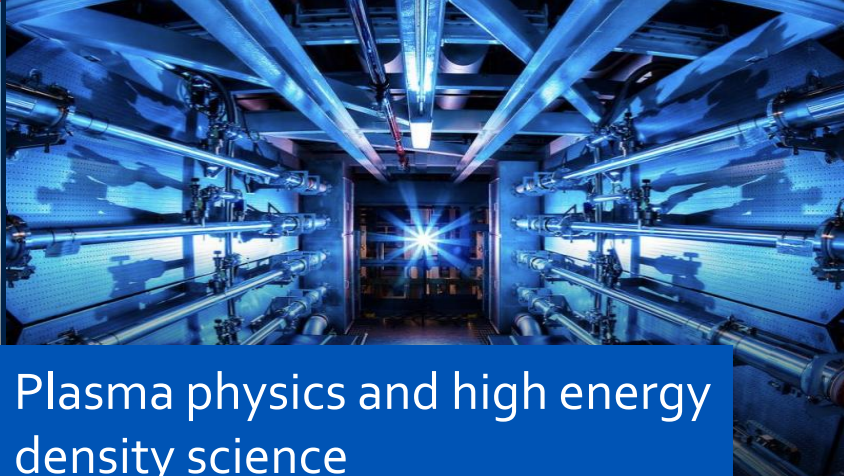
Biological physics



Climate physics



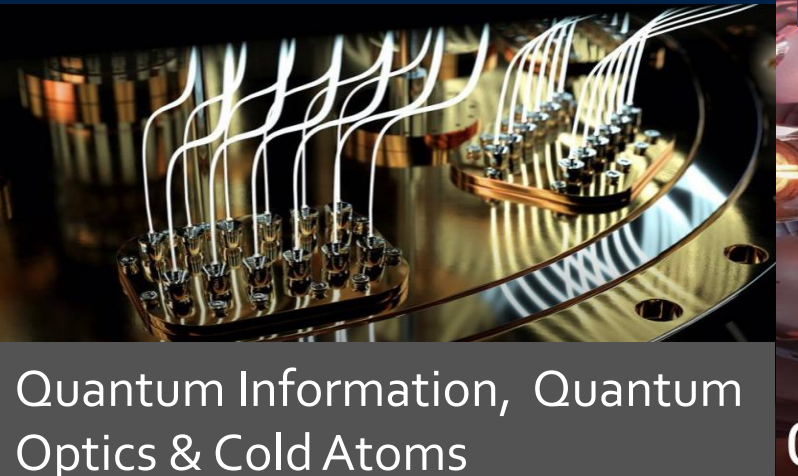
Photovoltaics and nanoscience



Plasma physics and high energy density science



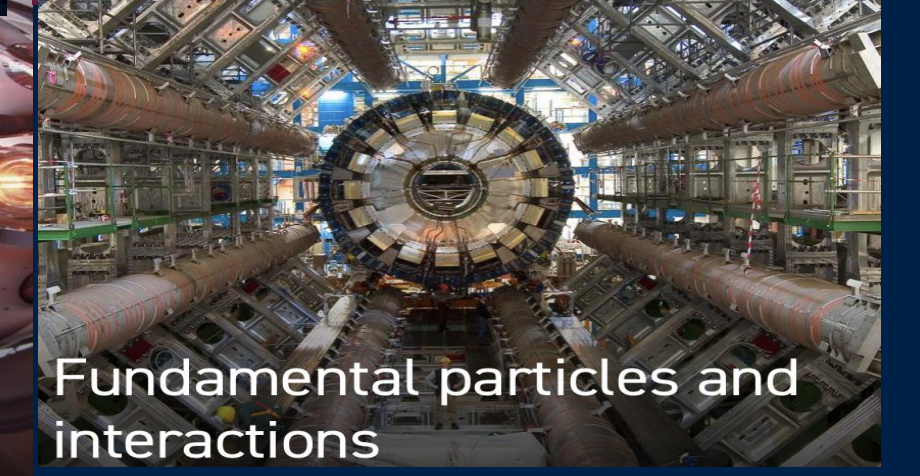
Astro and planetary physics



Quantum Information, Quantum Optics & Cold Atoms



Quantum materials



Fundamental particles and interactions

Oxford Particle Physics

30 Academics and
Senior scientists
26 PDRAs
63 Students

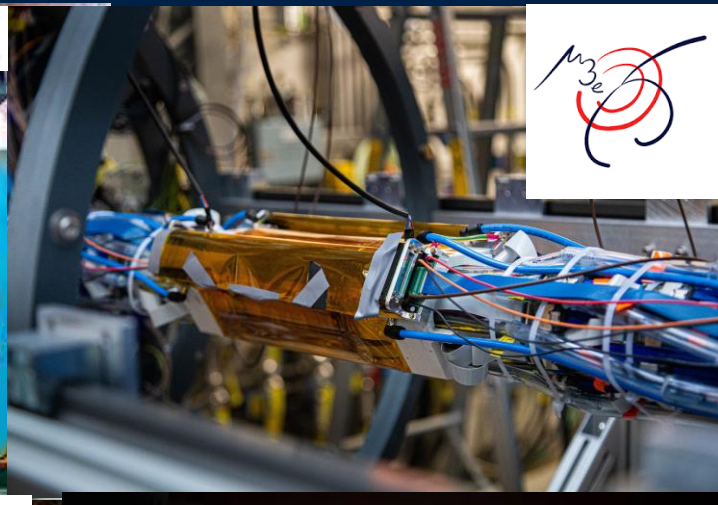
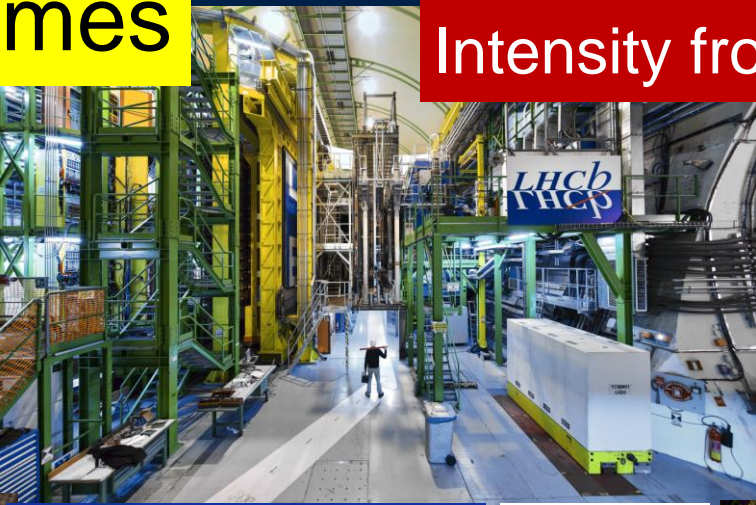
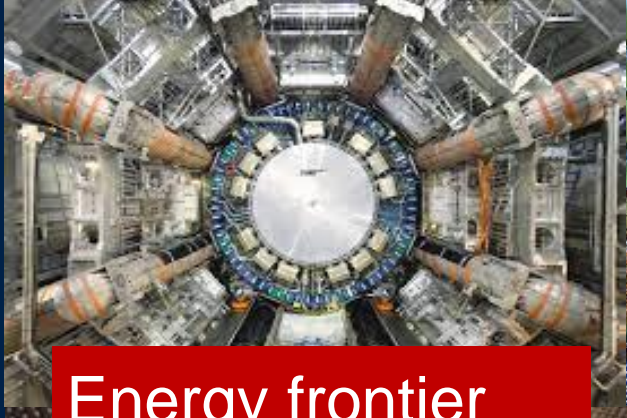
Excellent engineering
and technical support
staff



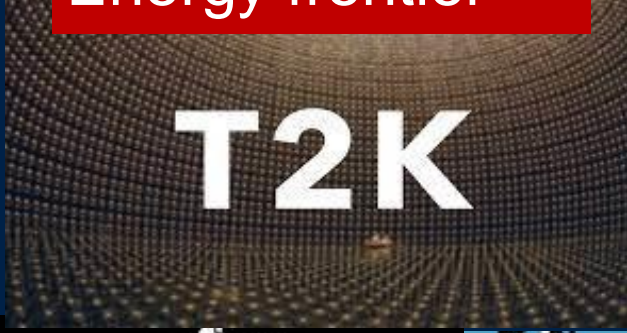
PP Science themes

Intensity frontier

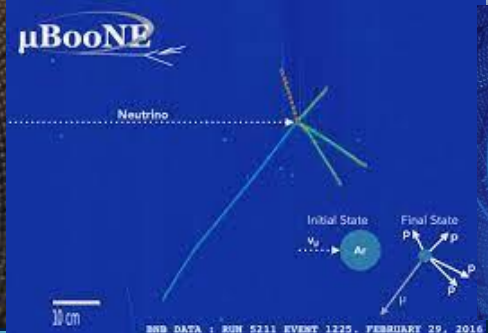
BES III



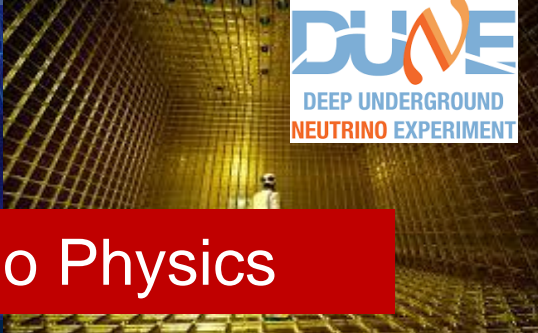
Energy frontier



T2K

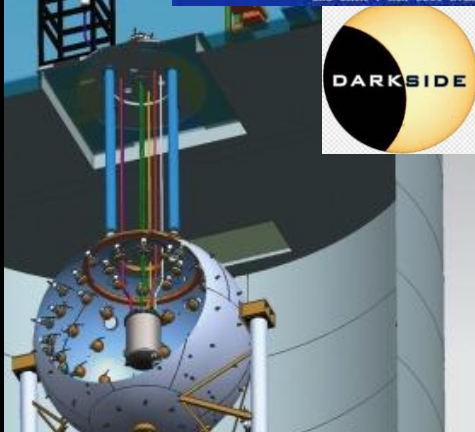


SNQ+

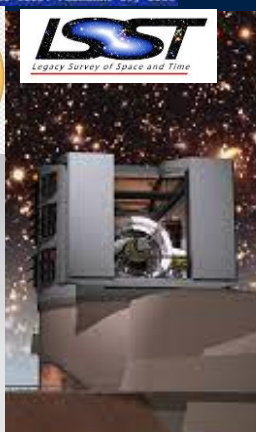


DUNE DEEP UNDERGROUND NEUTRINO EXPERIMENT

Neutrino Physics



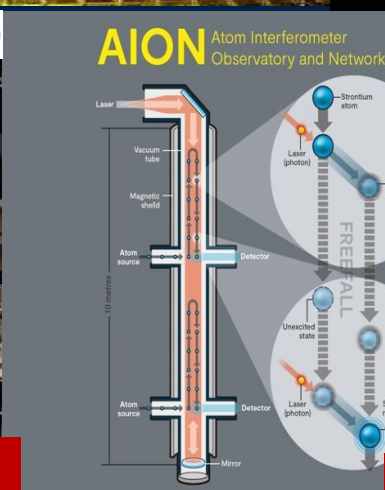
DARKSIDE



LSST Legacy Survey of Space and Time



MAGIS-100



AION Atom Interferometer Observatory and Network



Instrumentation



JAI John Adams Institute for Accelerator Science

Dark Universe and Quantum technologies

Accelerator Physics

Welcome
and
enjoy the amazing
opportunities open by
PSD13



THANK YOU!



UNIVERSITY OF
OXFORD

Physics at Oxford

17th century

Bacon

Boyle

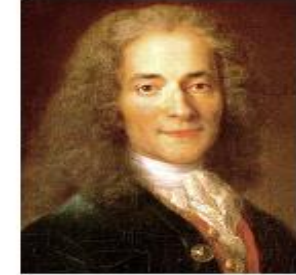
Hayley

Hooke

13th century



Grossteste



19th century

Reader in *Experimental Philosophy* appointed,
Experimental Philosophy taught as a degree (1850)
Original Clarendon Laboratory (1872),
first purpose-built Physics laboratory in UK

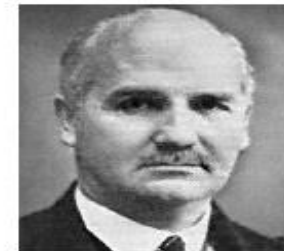


20th century



Henry Moseley uses X-ray spectroscopy
to order elements by atomic number

Physics Department built up by
Frederick Lindemann (Lord Cherwell)



Oxford Physics Continues in our Mission

WELCOME TO THE DEPARTMENT OF PHYSICS

We apply the transformative power of physics to the foremost scientific problems; educate the next generation of leading physicists; and promote the public understanding of physics.

