



UNIVERSITY OF MANCHESTER

OXFORD RD



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Welcome to
University of Manchester

Webinar – November 2022

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The webinar will cover the following topics:

- History and International Standing of Manchester University
- Facilities, the University and Manchester as a Student City
- Programme Contents and Teaching Methods
- Support for International Students
- Careers for Manchester Physics Graduates
- **2+2 and 3+2 Chinese Student Exchange Program**

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History and International Standing



25 Nobel Prize winners



1900

JJ Thomson, Physics (1906)
Ernest Rutherford, Chemistry (1908)

1910

William Lawrence Bragg, Physics (1915)

1920

Archibald V Hill, Physiology or Medicine (1922)

Niels Bohr, Physics (1922)

CTR Wilson, Physics (1927)

1930

Arthur Harden, Chemistry (1929)

James Chadwick, Physics (1935)

1940

Walter Norman Haworth, Chemistry (1937)

George de Hevesy, Chemistry (1943)

1950

Robert Robinson, Chemistry (1947)

Patrick Maynard Stuart Blackett, Physics (1948)

John Cockcroft, Physics (1951)

1960

Alexander Todd, Chemistry (1957)

Melvin Calvin, Chemistry (1961)

1970

Hans Albrecht Bethe, Physics (1967)

John Richard Hicks, Economic Sciences (1972)

Nevill Francis Mott, Physics (1977)

1980

Arthur Lewis, Economic Sciences (1979)

John Charles Polanyi, Chemistry (1986)

1990

Michael Smith, Chemistry (1993)

2000

Joseph E Stiglitz, Economic Sciences (2001)

John Sulston, Physiology or Medicine (2002)

2010

Andre Geim, Physics (2010)

Kostya Novoselov, Physics (2010)

物理领域

约瑟夫·汤姆孙(Joseph John Thomson), 1897年约瑟夫·汤姆孙发现电子也是亚原子粒子而为人所知, 并在科学圈内引起了轰动, 并最终于 1906年被授予诺贝尔物理学奖。

威廉·劳伦斯·布拉格(William Lawrence Bragg), 因为发现了关于X射线衍射的布拉格定律, 1915年与其父威廉·亨利·布拉格一同获得诺贝尔物理学奖。

尼尔斯·玻尔(Niels Bohr), 由于“对原子结构以及从原子发射出的辐射的研究”, 荣获1922年诺贝尔物理学奖。

查尔斯·威尔逊(Charles Thomson Rees Wilson), 因发明云室而与康普顿同获1927年诺贝尔物理学奖。

詹姆斯·查德威克(James Chadwick), 因发现中子而获得1935年诺贝尔物理学奖。

帕特里克·布莱克特(Patrick Blackett), 曾任英国皇家学会会长, 由于改进威尔逊云室方法及在核物理和宇宙线领域的发现, 获得1948年诺贝尔物理学奖。

约翰·考克饶夫(John Douglas Cockcroft), 因利用人工加速的亚原子粒子进行原子核嬗变的开创性工作而获得1951年诺贝尔物理学奖。

汉斯·贝特(Hans Bethe), 因在1938年解释了为什么恒星能够在长时间里向外释放如此之多的能量而获得1967年诺贝尔物理学奖。

内维尔·莫特(Nevill Francis Mott), 因为对磁性和无序体系电子结构的基础性理论研究, 与菲利普·安德森、约翰·凡扶累克共同荣获1977年诺贝尔物理学奖。

安德烈·海姆(Andre Geim), 因为“在二维石墨烯材料的开创性实验”而与其学生康斯坦丁·诺沃肖洛夫一同获2010年诺贝尔物理学奖。

康斯坦丁·诺沃肖洛夫(Konstantin Novoselov), 因为“在二维石墨烯材料的开创性实验”而与其教师安德烈·海姆一同获得2010年诺贝尔物理学奖

化学领域

欧内斯特·卢瑟福(Ernest Rutherford), 原子核物理之父, 因为“对元素蜕变以及放射化学的研究”而获得1908年诺贝尔化学奖。

阿瑟·哈登(Arthur Harden), 1929年与汉斯·冯·奥伊勒-切尔平因对糖类的发酵以及发酵酶的研究获得诺贝尔化学奖。

沃尔特·霍沃思(Walter Norman Haworth), 因在碳水化合物和维生素上的研究, 获1937年诺贝尔化学奖。

乔治·德海韦西(George Charles de Hevesy), 因“在化学过程研究中使用同位素作为示踪物”, 获1943年诺贝尔化学奖。

罗伯特·鲁宾逊(Robert Robinson), 因对植物生物碱的研究, 获得1947年诺贝尔化学奖。

亚历山大·罗伯图斯·托德(Alexander Robertus Todd), 曾任英国皇家学会会长, 被称为近代核酸化学的前驱, 主要成就是对核甙、核甙酸的研究, 弄清了核甙酸的结构和组成, 首先合成了人体内几种重要核甙酸单体, 也为核酸的“双股螺旋体”结构的胡定打下了良好的基础, 因而荣获1957年诺贝尔化学奖。

梅尔文·卡尔文(Melvin Calvin), 因与安德鲁·本森和詹姆斯·巴沙姆发现卡尔文循环(或称卡尔文本森循环)而声名显著, 1961年获诺贝尔化学奖。

约翰·查尔斯·波拉尼(John Charles Polanyi), 因对化学动力学的研究, 获得1986年诺贝尔化学奖。

迈克尔·史密斯(Michael Smith), 1993年因开发了对DNA特定位置进行定点诱变法而获诺贝尔化学奖

生理学或医学

阿奇博尔德·希尔(Archibald Vivian Hill), 因其在肌肉发热方面的研究, 与德国科学家迈耶霍夫一起获得了1922年的诺贝尔生理学或医学奖。

约翰·E·苏尔斯顿(John E. Sulston), 因发现器官发育和细胞程序性细胞死亡的遗传调控机理, 与悉尼·布伦纳、H·罗伯特·霍维茨一起获得2002年诺贝尔生理学或医学奖。

经济学

约翰·希克斯(John Richard Hicks), 因其在一般均衡理论和福利经济学理论上的贡献而与肯尼斯·约瑟夫·阿罗一起获得1972年的诺贝尔经济学奖。

威廉·阿瑟·刘易斯(William Arthur Lewis), 因为其于发展经济学上的贡献而闻名, 获得1979年诺贝尔经济学奖, 他也是第一位拿到非和平奖的诺贝尔奖的黑人。

约瑟夫·斯蒂格利茨(Joseph Eugene Stiglitz), 曾任世界银行资深副总裁与首席经济学家, 和迈克尔·斯宾塞、乔治·阿克洛夫由于在“对充满不对称信息市场进行分析”领域所做出的重要贡献, 而分享2001年诺贝尔经济学奖

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- **Agenda to be a top 25 university in the world**
- **3 Nobel Prize laureates within our current staff**
- **A degree that the world will recognise**
- **40,000 students from 150+ countries**
- **25% of our students are from overseas.**
- **Most important English city after London.**
- **Guaranteed accommodation for overseas student throughout the degree**

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**Manchester International
Airport is just 30 minutes from
our campus**

London is 2 hours away by train

**Easy reach of the beautiful Lake
District, Peak District, and
beaches on the West coast**

- **300+ student societies**
- **40+ different athletic union sport clubs to join**
- **Award-winning careers service (career fairs, mentoring programmes, volunteering and leadership schemes, one-to-one guidance):**
www.manchester.ac.uk/careers/international
- **Immigration and financial advice**
- **Counselling.**
- **Free in-sessional English language support (ULC)**
- **Orientation and Welcome. Airport Pick up.**

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Facilities, the University and Manchester as a Student City

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Our University... today

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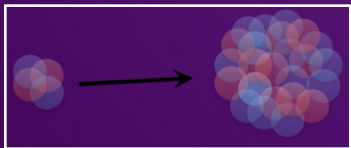
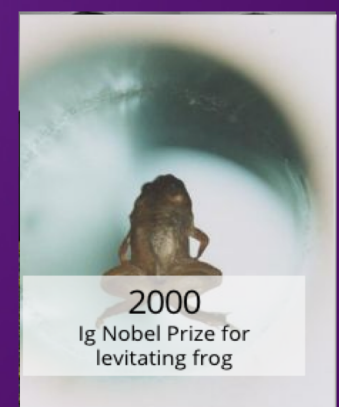
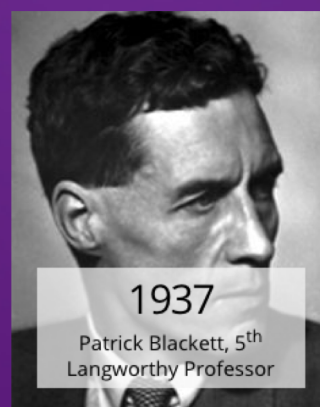
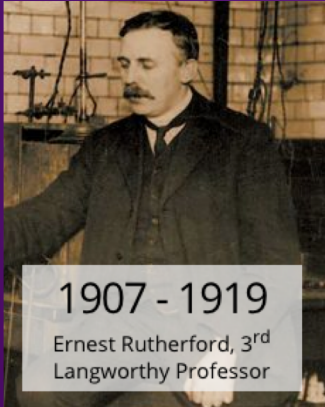
The University of Manchester

Mid-1800s to the present day

Manchester as a University counts 25 Nobel prize recipients amongst its staff and students; 13 are associated with physics.



Manchester has been home to many renowned pioneers in many areas of physics and astronomy.



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The School of Physics and Astronomy



The University of Manchester

Current International Standing



Shanghai University ARWU:

Manchester Physics is 1st in Europe

www.shanghairanking.com/Shanghairanking-Subject-Rankings/physics.html

Manchester physicists awarded 2010 Nobel Prize for discovery graphene

www.nobelprize.org/nobel_prizes/physics/laureates/2010/press.pdf



2010
Nobel Prize for the
discovery of Graphene



Home to Science Communicator – Prof Brian Cox

School of Physics and Astronomy



The School is located centrally on campus and occupies:

- Schuster Building
- Turing Building
- New annex
 - completed November 2017

School of Physics and Astronomy at Manchester

- ~100 academics who teach and do research
- 220 research and administrative staff
- 350 new 1st year students each year
- 70 new postgraduate students each year

A BIG School with lots of exciting science, a vibrant undergraduate curriculum with lots of choice, flexibility and opportunities.

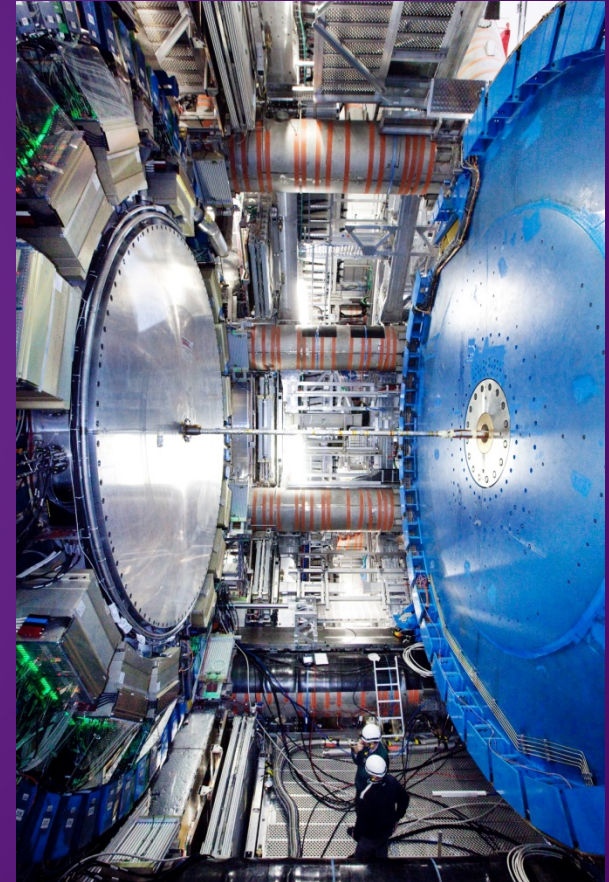


Accelerator, Nuclear and Particle Physics



Research groups:

- Accelerator physics
- Experimental nuclear physics
- Theoretical nuclear physics
- Particle Physics: experiment and theory



Condensed Matter, Atomic and Biological Physics



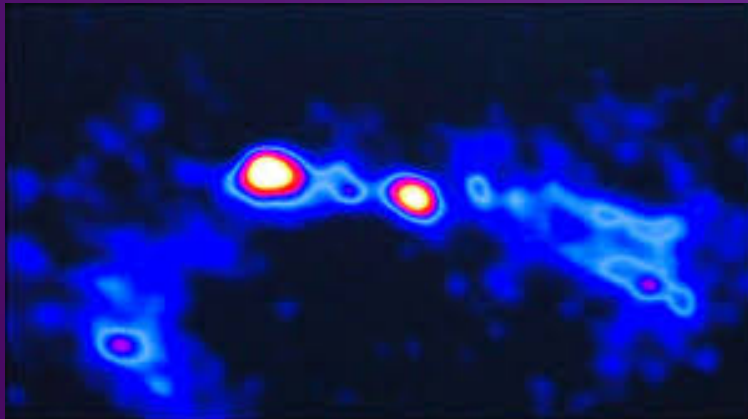
Research groups:

- Condensed matter physics
- Soft matter
- Biological physics
- Photon Physics
- Non-linear dynamics
- Atomic physics
- Complex systems and statistical physics

Jodrell Bank Centre for Astrophysics



© Anthony Holloway



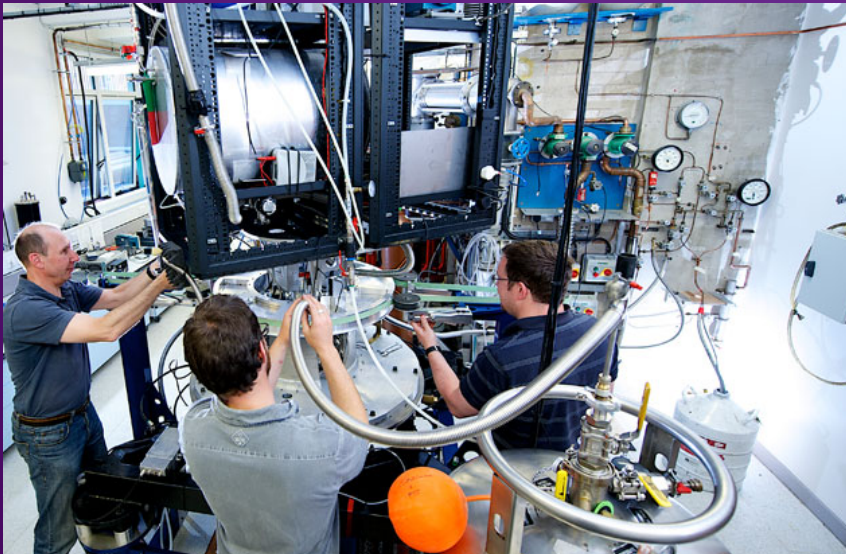
Research groups:

- Cosmology and extragalactic astronomy
- Pulsars and compact objects
- Radio technology
- Sun, stars and planets
- Square Kilometre Array (SKA)



Research Accomplishments

- One of the largest physics departments.
- More than 150 academic and research staff
- Two Nobel Prize winners in 2010.
- First placed physics department in Europe
 - 2017 & 2018 Academic Ranking of World Universities
 - University of Shanghai Jiao Tong University
- Ranked 1st in the UK for the impact of our research.
 - REF 2014



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Programme Content and Teaching Methods

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- Teaching is usually within 5 mins of the Schuster Building.
- Schuster has a café and dedicated space especially for physics students.



Undergraduate Degrees:

Bachelor of Science (BSc)

Three-year honours degree.

Not necessarily going to enter a physics-related career.

Master of Physics (MPhys)

Four-year honours degree with greater breadth and depth, so-called “integrated masters”, with research skills.

Intending to become “professional” physicists.

Sometimes called Master IN Science (MSc).

Route to Postgraduate Study:

BSc + MSc + PhD:

Master OF Science (MSc) one-year postgraduate degree includes research skills.

Less common route, still popular for international students

MPhys + PhD:

Research skills as part of UG study, straight onto PhD.

Undergraduate Degrees

	BSc	MPhys
physics	✓	✓
physics with astrophysics	✓	✓
physics with theoretical physics	✓	✓
physics with philosophy	✓	✓
physics with study in europe		✓
mathematics and physics	✓	MMath&Phys



CORE PLUS OPTIONS

CORE MODULES: For example, Mathematics, Dynamics, Quantum Physics and Relativity, Electricity and Magnetism, Vibrations and Waves, Properties of Matter, Wave Optics, Solid State Physics...

PHYSICS OPTION MODULES:

Level 1: Physics of Everyday Life; Random Processes; Energy Sources; Solar System; Advanced Dynamics

Level 2: Lagrangian Dynamics; Galaxies; Atmospheric Physics; Photonics; Complex Variables and Integral Transforms; High Energy Astrophysics; Computational Physics

Level 3: Non-linear Physics; Interstellar Physics; Nuclear Fusion and Astrophysical Plasmas; Lasers and Photonics; Meteorology and Atmospheric Physics; Physics of Medical Imaging; Mathematical Methods; Physics of Living Processes; Programming in C++; Exoplanets...



Year 4 MPhys



MPhys Research Project plus options.

PHYSICS OPTION MODULES:

Level 4: Advanced Quantum Mechanics; Applied Nuclear Physics; Stars and Stellar Evolution; Semi-conductor Quantum Structures; Physics and Reality; Soft Matter Physics; Nuclear Structure and Exotic Nuclei; Quantum Field Theory; Frontiers of Particle Physics I; Advanced Statistical Physics; Radio Astronomy; Laser Photomedicine; Gravitation; Frontiers of Laser Physics; Frontiers of Photon Science; Nuclear Forces and Reactions; Gauge Theories; Physics of Fluids; Frontiers of Particle Physics II; Biomaterials Physics; Frontiers of Solid State Physics; the Early Universe; Galaxy Formation...

BIG SCHOOL => LOTS OF RESEARCH => LOTS OF SPECIALISTS
=> LOTS OF CHOICE FOR UNDERGRADUATE MODULES,
LABORATORY EXPERIMENTS and MPhys RESEARCH PROJECTS

OUTSIDE OPTIONS

On most degree programmes, there is the opportunity to take options in other academic disciplines subject to timetable and prerequisites:

For example, within the Faculty of Science and Engineering:
mathematics; computer science; earth sciences...

For example, more widely in the University:
history and philosophy of science, business and management,
economics, languages...

Special Initiatives:

Manchester University College
Courses

Manchester Enterprise Centre
Courses



TEACHING METHODS

LECTURES: Core Modules (8 hrs) + Option (2 hrs)
mathematics, dynamics, quantum physics and relativity,
astrophysics and cosmology + option

LABORATORY: One-day block (6 hrs)
e.g. speed of light; gravitational constant; resonant vibrations...
includes data analysis, computing, electronics and group working

WORKSHOP CLASSES: (2 hrs)
develop problem solving techniques

TUTORIALS: (2 hrs)
two per week in core physics and mathematics

TOTAL CONTACT HOURS: around 20 hrs/week

**BIG SCHOOL => LOTS OF DIFFERENT TEACHING METHODS
=> SMALL GROUPS THROUGH TO LARGE GROUPS**

Average of 93% student satisfaction rate in the National Student
Survey





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Support for International Students

INTERNATIONAL STUDENTS

School of Physics and Astronomy has a distinctly international environment:

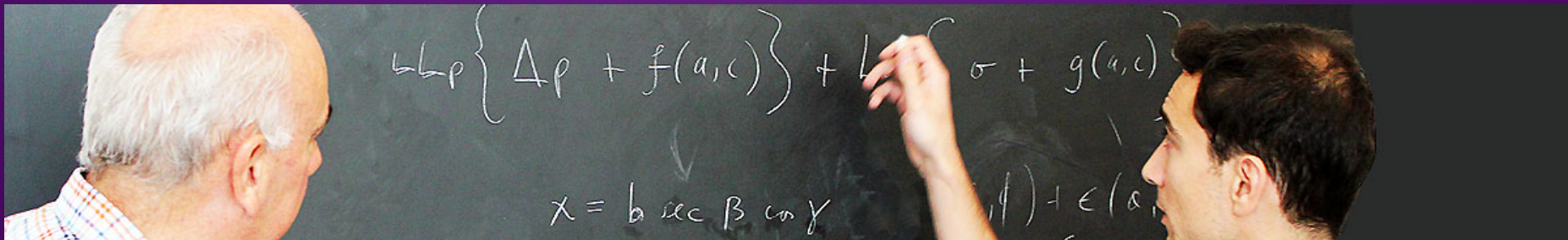
- Around 40% of academics and many researchers are from overseas.
- More than 70 UG students and around 60 PG students from outside UK and EU.

Usually one or two students from the School win prestigious Faculty Excellence Scholarships for exceptional international UG students.

There is also a School scholarship scheme to award exceptional high-school performance.



www.physics.manchester.ac.uk/study/undergraduate/internationalstudents/



Support for Chinese students

- Support from dedicated member of staff – Dr Guoxing Xia
 - Visa application
 - Accommodation
 - Welcome in Manchester
 - Reception dinner with Head of School
 - Academic advice:
 - Exam and results
 - Progress
 - Careers:
 - Advice
 - Postgraduate Applications
 - Reference letters
- Peer support system



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Careers for Manchester Physics Graduates

CAREER DESTINATIONS

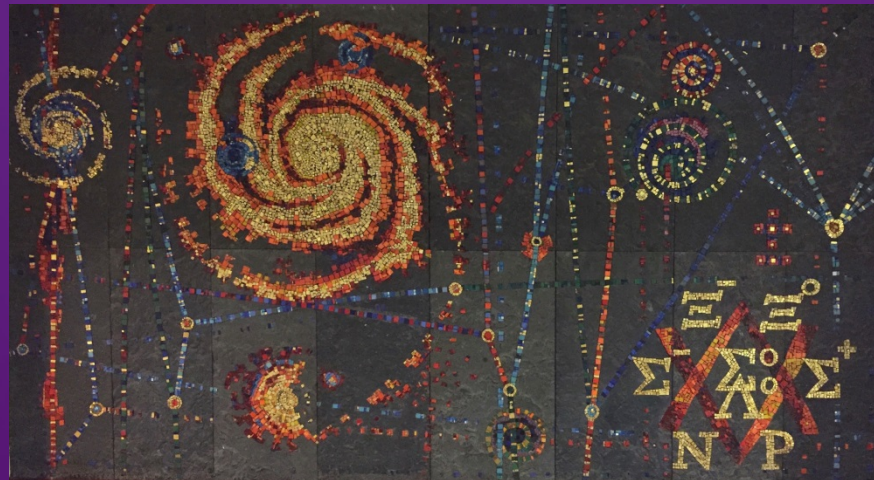
Graduates 2012-14: six months after graduation

	BSc	MPhys
<p>Scientific, Technical and Computing</p> <p>For example, Amec, BAE Systems, BP, British Gas, British Telecom, Cisco Systems, ESSO, IBM, Meteorological Office, NHS, QinetiQ, RAF, Sharp, TDK, UK-AEA, Vodafone...</p>	15%	23%
<p>Finance Banking and Management</p> <p>For example: Accenture, Bank of England, British Airways, Delloitte, Deutsche Bank, JP Morgan, KPMG, Lloyds Bank, Merrill Lynch, Price Waterhouse Coopers, Coop Bank, Barclays, HSBC, Schrodgers...</p>	33%	19%
<p>Research and Further Training</p>	36%	47%
	PhD (1%)	(35%)
	MSc (20%)	(7%)
	Other PG diplomas (15%)	(5%)
<p>Other Destinations</p>	16%	11%



Department of Physics and Astronomy

- One of the top physics departments internationally with a long history of excellence in physics.
- A world-leading and exciting research portfolio that covers all of modern physics.
- Excellent high teaching quality with modern facilities and infrastructure.
- A rich and varied undergraduate curriculum with lots of choice, flexibility and opportunities.



We hope you come and join us!

NEED MORE DETAILS?

The Department's web site:

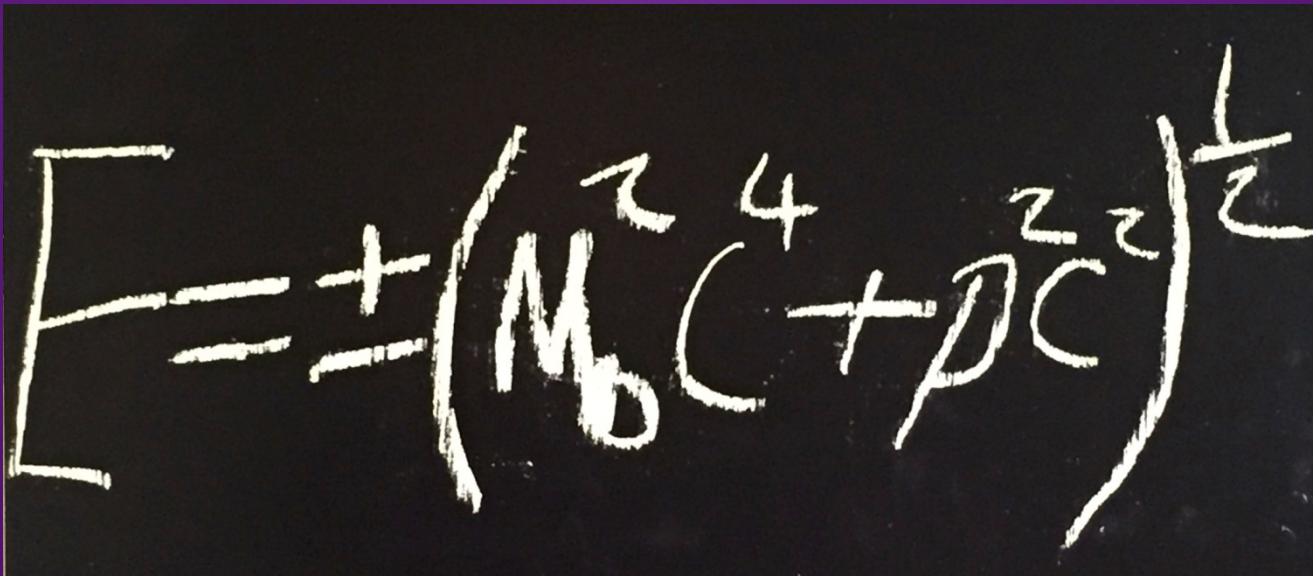
<http://www.physics.manchester.ac.uk/>

The Physics and Astronomy Brochure:

<http://www.physics.manchester.ac.uk/study/undergraduate/>

The "BLUE BOOK":

<http://www.physics.manchester.ac.uk/study/>



A handwritten equation on a chalkboard. The equation is $E = \frac{1}{2} (M_0 c^4 + p^2 c^2)^{1/2}$. The '1/2' is written as a superscript on the right side of the equation. The 'M_0' has a subscript '0'. The 'c' has a superscript '4'. The 'p' has a superscript '2'. The 'c' has a superscript '2'. The entire expression is enclosed in large parentheses.

2+2 and 3+2 program between UPC and UoM

- 2+2 and 3+2 program has been successfully run for 10+ years
- The international students (after finished their 2nd or 3rd year study in their home universities) will join in the 2nd year and 3rd year study in Manchester.
- After further 2 years study, they will obtain the BSc in Physics or MPhys degrees from Manchester.
- Entrance Requirements:
 - Academic Average Marks > 75%
 - IELTS: >= 6.0 with each component > 5.5
 - Interview if necessary
- Application period (March to by latest mid June)
- How to apply: contact Prof Wei Zhou and me

Chinese Culture in Manchester



alamy stock photo



July 2019



Physics @Manchester



1st in Europe for Physics

- Highest placed physics department in Europe in the Academic Ranking of World Universities
- Breadth of research covers all areas of modern physics, including graphene research led by two Nobel Laureates
- Exciting and wide ranging, 3 or 4 year undergraduate programmes taught in a busy, student-friendly city

www.manchester.ac.uk/physics/undergraduate

You are very welcome to study/live in Great Manchester!



Government policy



🏠 搜狐 | 新闻 | 体育 | 汽车 | 房产 | 旅游 | 教育 | 时尚 | 科技 | 财经 | 娱



美国高中留学



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评论



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教育部部长：“着力鼓励出国留学，教育必须面向世界！”

2020-12-13 13:47

疫情开始以来，留学生的去向一直困扰着不少家长和学生。赴海外留学的安全性，复杂多变的国际关系，一直让国内学生进退两难，接下来的留学趋势究竟会如何发展？教育部部长已经给出了答案！



12月7日，由联合国教科文组织、中国教育部、中国联合国教科文组织全国委员会共同举办的国际人工智能与教育会议开幕。

在“国际人工智能与教育会议”上，教育部部长陈宝生表示：

教育部发话：支持留学、鼓励回国 | 留学归来福利多：教育部支持留学 | 教育部部长鼓励出国留学-搜狐新闻

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os Gmail Introduction to Pla... Recording Screen... Manchester Video AWAKE collaborati... Manch

搜狐新闻

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教育部部长鼓励出国留学

光明网 2020/12/07 19:15

教育热点话题【教育部部长鼓励出国留学】在12月7日开幕的“国际人工智能与教育会议”上，教育部部长陈宝生表示，人工智能等新技术向我们展示了变革教育的巨大潜能。疫情终将过去，但世界已回不到过去，教育也不会再是原来的教育。中国认为教育必须面向世界，与各国共同发展，将始终坚持教育对外开放不动摇，不断加强同世界各国和联合国教科文组织等国际组织的交流与合作，打造“一带一路”教育行动升级版，着力鼓励出国留学，完善留学中国的政策与服务，积极引进优质教育资源。（光明日报全媒体记者柴如瑾）



Number	Name	Major	Cultivating Method	Year of Application	Status
1	Jianlin Zhang	Applied Physics	2+2	2008	Work in a foreign company in China
2	Xingguo Li	Applied Physics	2+2→2+3	2009	PHD in MU and then work in SJTU
3	Sidi Cui	Applied Physics	2+2→2+3	2010	Master in School of Bussiness of MU then work in family business
4	Heng Qin	Material Physcis	3+2	2012	PHD in Imperial College
5	Luo Ma	Applied Physics	2+2	2012	Work in a foreign company in China
6	Runkun Du	Material Physcis	3+2	2012	Work in PetroChina
7	Ying Song	Applied Physics	3+2	2012	Work in Sinopec
8	Xiaoshuai Fan	Applied Physics	2+2→2+3	2013	PHD in MU
9	Haomin Yuan	Applied Physics	2+2→2+3	2014	Work
10	Siqiao Zhang	Applied Physics	2+2	2015	PHD in Nanjing University
11	Zezhuang Hao	Applied Physics	2+2	2016	PHD in Imperial College
12	Xin Zhong	Applied Physics	2+2	2016	Work
13	Wenhao Chen	Applied Physics	3+2	2017	Work in Hisense
14	Yongqing Gong	Material Physcis	2+2→2+3	2017	Undergraduate
15	Xiyuan Liu	Applied Physics	2+2→2+3	2017	Undergraduate
16	Ziqian Xiang	Applied Physics	3+2	2018	Undergraduate

Tangdi Luan, Rancheng Bi (2019); Zheng Zhou, Qixuan Xu (2020), Dingyuan Xue (2022)

(from Prof. Wei Zhou)

Thank you all for listening !

