

Welcome to the Department of Physics and Astronomy

Welcome Week 2023

Introduction

Professor Adrian Bevan

Head of the School of Physical and Chemical Sciences

Department of Physics and Astronomy

History

Physics and Astronomy has been on the Mile End Site since 1887 when this part of QMUL opened (as the People's Palace Technical College).

Our early research included understanding the foundations of atomic physics, condensed matter, theoretical physics and astronomy – challenging the limits of understanding of the time



Department of Physics and Astronomy

History

The current building was opened in 1964.

Our research has evolved with the times but remains relevant – focusing on the leading edge challenges of the day.

We also seek to apply our knowledge as physicists to generate real-world solutions to problems, and invent new technologies.



You will be taught by world leading researchers in their fields.

While you are working with us to learn, please consider taking a moment to talk with your lecturers about their work.

Department of Physics and Astronomy

Our research groups are

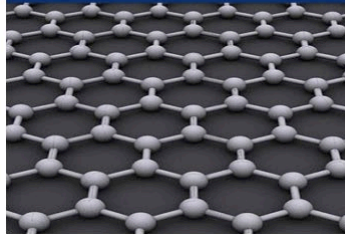
Astronomy Unit

Research in cosmology, planetary formation and dynamics, space and solar plasma physics, survey astronomy and stellar physics.



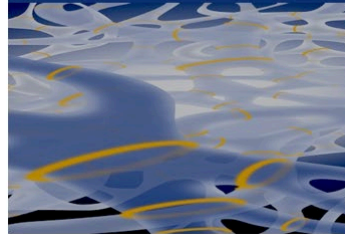
Centre for Condensed Matter Physics

Concentrates on understanding the fundamental physical properties of materials.



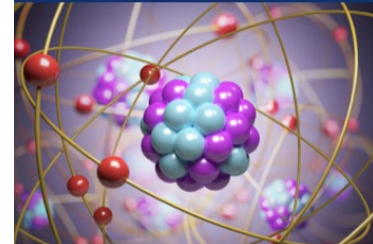
Centre for Theoretical Physics

Concentrates on the development of string theory and its many applications. New applications of string theory to particle physics and more.



Particle Physics Research Centre

Leading in international experiments including ATLAS, T2K and SNO+, as well as hosting a major component of GridPP.

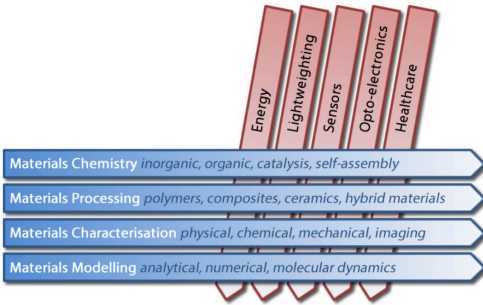


Department of Physics and Astronomy

We also do collaborative research in materials and radiation detector development

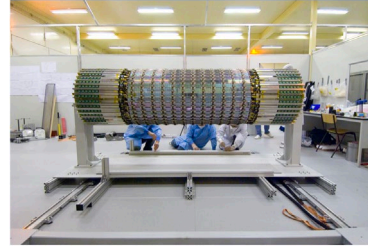
Materials Research Institute

A centre of excellence providing the platform to support dynamic inter-disciplinary materials research.



Detector Development

This is a group of collaborative researcher from Centre for Condensed Matter Physics and Particle Physics Research Centre.



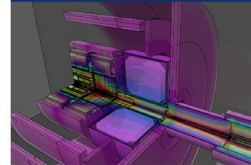
New Technologies for Radiation Detection

Detector research and development for the particle, nuclear, medical and space industries.



Simulation and Modelling

Radiation environment simulation, damage modelling, mitigation strategies.

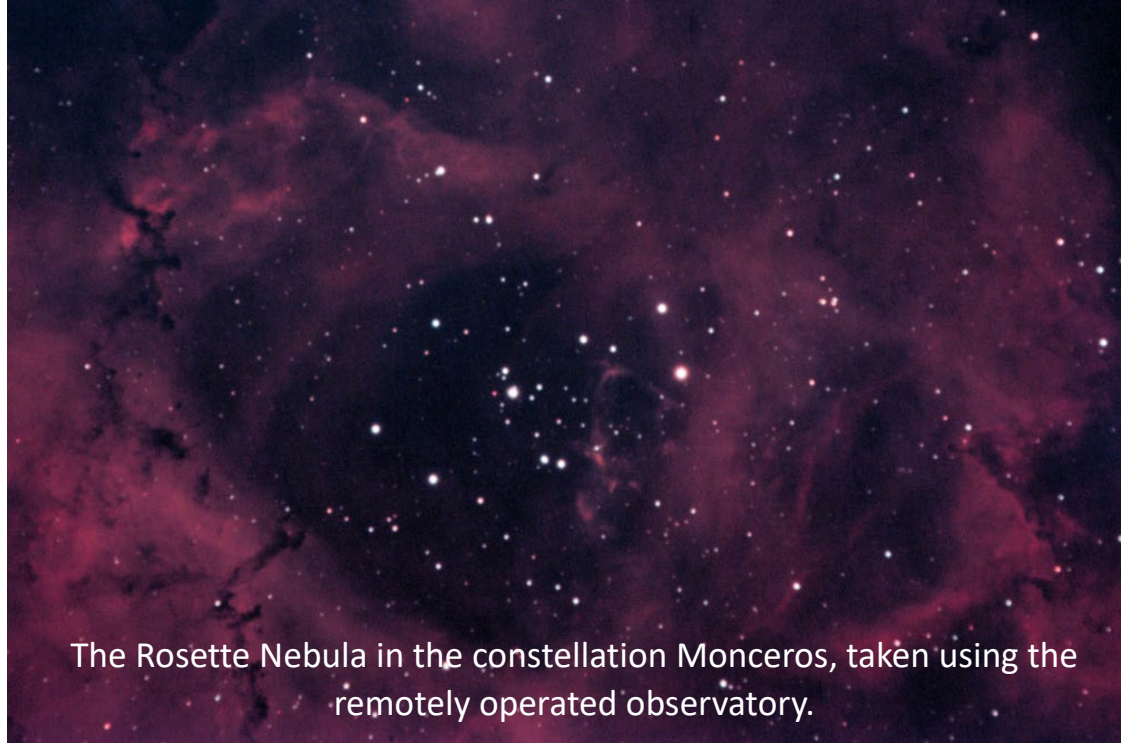


Independent projects in your final year are built around all these activities, and there are a few opportunities for internship

Department of Physics and Astronomy

Recent improvements

- Upgrade of the observatory – remote observing is now possible
- Observatory being integrated into year 1 teaching.
- Invested in equipment to enhance experimental projects
- Looking for new investments to enhance teaching



The Rosette Nebula in the constellation Monoceros, taken using the remotely operated observatory.

Department of Physics and Astronomy

Nobel Prizes – 1/3 of QMUL's prizes are for Physics or awarded to Physicists

- Prof. Joseph Rotblat
 - Nuclear Non-proliferation, Nobel Peace Prize in 1995
- Prof. Sir Peter Mansfield FRS (BSc 1959, PhD 1962):
 - Invented Magnetic Resonance Imaging, Nobel Prize for Physiology or Medicine in 2003
- Prof Sir Charles Kao FRS FREng
 - Nobel Prize for Physics in 2009 for his work on transmission in optical fibres

Department of Physics and Astronomy

- Every year we see future leaders in government, industry, science and technology graduate from our department
- While you are here you will work hard toward achieving your dreams and aspirations
- We are here to work with you

Department of Physics and Astronomy

School of Physical and Chemical Sciences

- I will meet with you again tomorrow to talk about our School
- The world is a multidisciplinary place, and we reside in the School alongside the Department of Chemistry
- Gives you an opportunity to meet with people from another discipline and help develop essential soft skills around communicating across subjects
- I will be seeing you in the semester related to onboarding and exam readiness prep sessions to help you learn better

Overview of First Year Teaching

Chris White, Director of Teaching and Learning

Welcome Week 2023

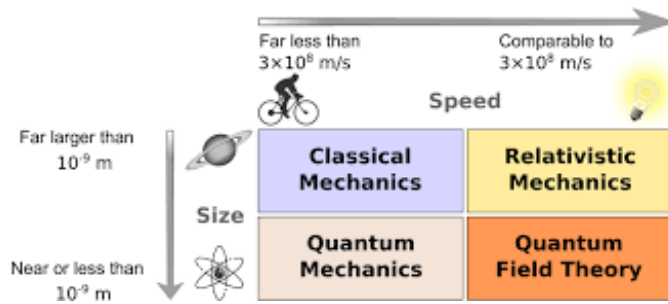
Introduction

- First of all, welcome to Queen Mary University of London.
- The Department of Physics and Astronomy is a thriving hub of scientific activity.
- You are now part of this! 😊
- You will interact with world-leading scientists on a daily basis...
- ...and contribute your own ideas!
- As **Director of Teaching and Learning**, I help students and staff to make our courses the best they can be.
- Let's briefly look at what's in store...



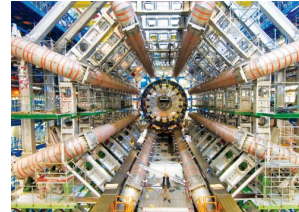
All of Physics and Astronomy

- Our universe is filled with **matter**, that is acted on by **forces**.



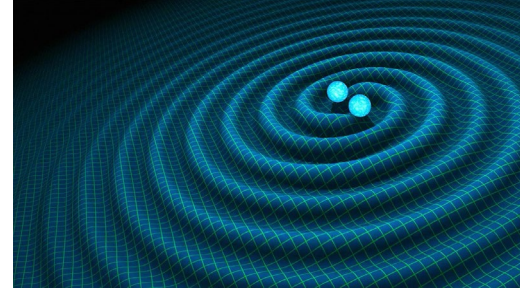
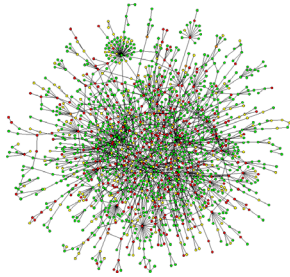
- There are different laws, depending on whether objects are big / small, and fast / slow...
- All of these are a consequence of a single underlying **Quantum Field Theory**.

- These theories challenge how we think about space, time and even the nature of science itself.
- But they describe almost everything from distance scales 10^{-18} — 10^{21} m.



All of Physics and Astronomy

- To describe the most extreme places in the universe, and also how it began, we need to add **General Relativity**.
- Space and time get even weirder...
- ...in ways that have only just become measurable!



- Finally, for complex systems, we need the ideas of **thermodynamics**.
- Our staff work directly with all of these theories, including their applications, and what may lie beyond them.
- We are also involved in the most cutting-edge international experiments.

Your first year

- In year 1, you will learn the foundations of everything we have just seen.
- We will introduce the **ideas** of classical & quantum physics, and relativity...

Classical Physics

Modern Physics

Electric and
Magnetic Fields

- ...and also develop the **mathematics** you will need:

Mathematical
Techniques 1

Mathematical
Techniques 2

- We will also give you **practical skills** (e.g. labs, programming):

Scientific
Measurement

Professional Skills
for Scientists

Your first year

- Finally, optional courses allow you to **specialise** further:

Our Universe

Introduction to
Data Science

- All of these courses develop subject-specific knowledge, but also wider skills useful for many different careers.
- You are the **next generation of scientists**, who will create new theories, and develop useful technologies.
- But you are also the next generation of teachers, bankers, lawyers, data scientists, journalists, software engineers, media developers, healthcare professionals, civil servants...

<https://www.iop.org/careers-physics/your-future-with-physics/career-paths>

Teaching methods

- University life is **very different** to school.
- You will have a lot **more independence**, as you develop your leadership and ambitions.
- We use various teaching methods, which we constantly review using **student feedback**.
- Many people can **help you** on every step of your journey:

Advisor of
Studies

(Deputy) Module
Organisers

Demonstrators

Student
support team

Senior Tutor

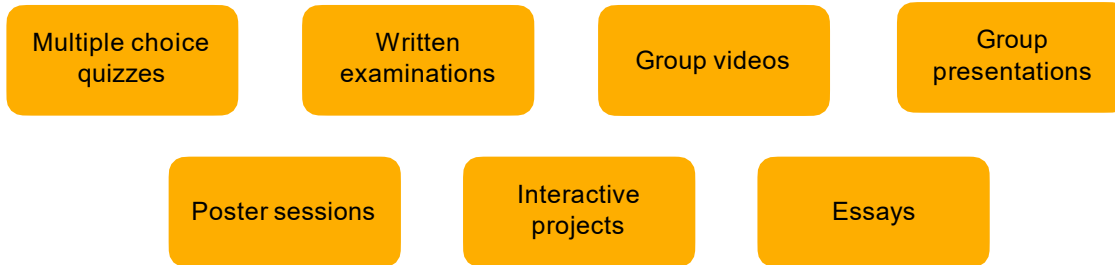
Director of Teaching and
Learning

Fellow students, in any
year



How will you be assessed?

- We are constantly looking for new ways to help you show off...
- ...and gain a sense of achievement that carries you onwards and upwards.
- Our aim is to replicate what you will see as a working scientist or industry leader.



- You can ALWAYS ask for advice about ANY piece of work you encounter.
- We genuinely want to build your confidence so that you can succeed!

The challenge ahead

- Physics and Astronomy can be **challenging**, but that **does not** mean that you will fail at them!
- Nobody — staff or student — finds the subject easy all the time!!!
- If anyone says differently, they are lying, although possibly to themselves 😏
- You might sometimes feel like you are the only one having difficulty.
- This is **NEVER** true, and you should **ALWAYS** talk to someone if you feel like this.
- The ideal scientific environment is one where **ANYONE** can ask **ANYTHING** without being judged.
- This is what we strive for at QMUL, and you can all help!



Professionalism

- The ideal scientific environment is one in which **everybody** feels able to speak up, and to get help from each other.
- The same is true of any workplace.
- It is up to **all of us** to create this environment.
- Always be on the lookout for unprofessional behaviour.

Making others feel stupid

Offensive “banter”

Cheating / plagiarism

Excluding people

Safety issues

- Call it out as an “active bystander” if you feel able to.
- If not, speak confidentially to your advisor, senior tutor, support staff member etc.
- Your concerns will be taken **very seriously**.

Conclusion

- You are at a hugely exciting time in your lives...
- ...and also for science, with many open problems needing to be solved.
- We are genuinely looking forward to see what you achieve! 🤖
- Our job is to help you **realise your ambitions**, whatever career path you choose.
- Your job is to **engage strongly** with us and each other, and to help us to help you!



The background features a dark blue gradient with a subtle starfield. Overlaid on this are several circular and semi-circular patterns in a lighter blue color. These include solid lines, dashed lines, and arrows indicating clockwise or counter-clockwise directions. A prominent feature is a large circular scale on the left side, with numerical markings from 140 to 260 in increments of 10. The overall aesthetic is scientific and technical.

SCHOOL OF PHYSICAL & CHEMICAL SCIENCES (SPCS) STUDENT AMBASSADOR

AN ENRICHING & EXCITING OUTREACH ROLE

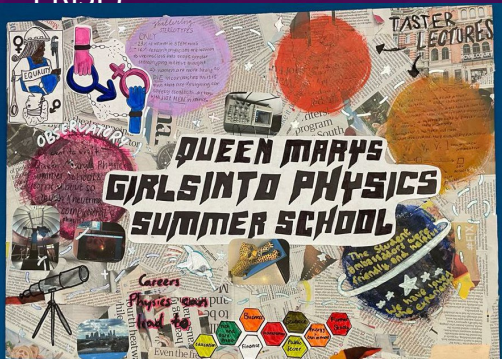
Shiksha Teeluck, 3rd Year BSc Theoretical Physics Student & SPCS
Ambassador

SPCS STUDENT AMBASSADOR JOB DESCRIPTION


- Extended outreach work as a representative for QMUL SPCS
- Promoting the fascinating study of Physics to a diverse and broad audience, from secondary school children to prospective students
- Supporting secondary schools with delivering super curricular activities, working alongside teachers, the general public and the SPCS recruitment team
- Igniting passion towards the study of Physics and to inspire a future generation of potential physics students.

OPPORTUNITIES & EVENTS

Outreach Events (e.g. Summer Schools, Connect Physics, PRiSF)



QMUL Recruitment Events (Open Days, Offer Holder Days, Festival of Communities)



Jamie

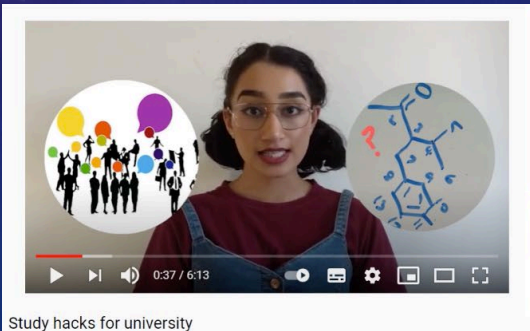
Profile Notes:

They are motivated and creative and have extra skills in spreadsheet use and in managing people. They have some work experience as an event organiser at a conference centre. Their hobbies are writing short stories and looking after their pet cats.

Qualifications:

- Degree in Physics
- A Levels in Physics, Maths and Economics
- 10 GCSEs A*-C

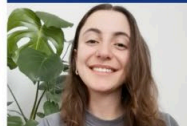
Q	8
X	18
A	18
T	9
B	12



Study hacks for university

5 things I wish I knew before starting my Physics degree

Elena, MSci Astrophysics →



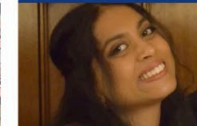
Everything you need to know about the Physics teaching labs

Laur, BSc Physics →



Is a Physics degree really as hard as the general public think it is?

Shiksha, BSc Theoretical Physics →



Online Advertising (Articles for the newly refurbished subject hubs, YouTube Videos, website blogs)

WHY BECOME AN SPCS AMBASSADOR?



Flexible hours



Boost your CV



Make an impact
on young people



Develop
valuable skills



Enhance your
uni experience



Earn a salary



Job diversity



Share your
journey

APPLICATIONS & QUESTIONS

- Complete the application form (can be found using the QR Code).
- **DEADLINE: 28th September (please kindly submit the application before the deadline)**
- If successful in the first stage of applications, **interviews** will be held on the **11th October**.
- If successful after the interview, a comprehensive induction will be held on the **18th October**.

For any questions:

- Contact **Dr Eliza Hunt (Outreach, Widening Participation and Public Engagement officer)** via email eliza.hunt@qmul.ac.uk
- Contact **Sadiya Hussain (Student Recruitment and Marketing)** via email sadiya.hussain@qmul.ac.uk
- Visit the SPCS outreach office: **Room 109, G.O. Jones Building**
- Speak to an **SPCS ambassador** (keep an eye out for the purple shirts)

Student Ambassador Application Form 2023-2024





PsiStar

Physics and Astronomy Society

Welcome
To PsiStar!

19th September 2023

What We Do

- We are your first point of contact – you can talk to us about anything socially or academically so we can guide you to get the appropriate help
- We organise regular socials, with drinking and non-drinking events
- We organise regular extra-curricular academic lectures with members of the department as well as other universities
- We run several events with the IoP and the SPA to help you decide what you want to do going forward or to further your interest in specific areas
- We have an annual trip abroad to a place which is significant in Physics
- We hold an annual ball at the end of the year, with drinks, food and live music

Socials & Lectures

- We organise nights out such as pub crawls, bowling and dinners out
- Our Lectures run a few times a month and usually on Thursday evenings out of G.O Jones Lecture Theatre. Our first lecture is at 17:00 on September 28th: **'Planetary formation'** by Dr Thomas Haworth.



Collaborations -

- We collaborate with the IoP and the SPA to run events during the year. These include workshops and talks
- We invite companies and representatives from industries to network with you
- We have talks from PhD students to talk about their research and the benefits of post-grad education
- PASS is open to all foundation-year, first-year and second-year students. Weekly sessions are run by students in higher years to help with your studies and anything you may have a problem with.

IOP Institute of Physics



IOP Institute of Physics

Annual Trip

The trip runs in semester B reading week (February)

- Previous locations have included –
2016 – Norway
2017 – Geneva
2018 – Iceland
2019 – Amsterdam
2020 – Kiev & Chernobyl exclusion zone

The cost of the trip is usually less than £400



Memberships



- Memberships available from QMSU website - <https://www.qmsu.org/groups/psistar/>
 - Memberships are £8 for the year!
 - They help support the society so that we can run great events in future and you need to be a member to attend regular lectures and socials
- ← Scan here to go to QMSU

The logo for QM PLUS, featuring the letters 'QM' in a large, white, serif font, followed by 'PLUS' in a smaller, white, sans-serif font, and a white plus sign to the right. The entire logo is set against a dark blue rectangular background.

QM PLUS



Social Media

- Follow us on Facebook, Instagram, WhatsApp and our QM+ page to stay up to date!
- Also subscribe to our mailing list so that you are the first to know when we schedule a new event!
- <https://qmplus.qmul.ac.uk/course/view.php?id=16024>

Senior Tutor

Dr David Mulryne, Room 512

Welcome Week 2023

Welcome!

Role of senior tutor

- Together with **academic advisors** and **student support officer** to provide **academic advice** and **pastoral care**

Academic advice

- Module Selection
- Advice on your studies/exams etc., and on further study and career choices, reference letters....
- Changing degree programme (e.g. B.Sc. to M.Sci, or field of study within our B.Sc/M.Sci. programmes)
- First point of contact is your **academic advisor**, they might refer you on (e.g. to Careers and Enterprise service)
- If needed I'm always available to discuss

Pastoral Care

- Mental health and wellbeing issues may affect your studies – if they do **please reach out to us**
- Personal issues
- Financial pressures
- Workplace issues
- We will always listen, and offer help directly, or refer you to support structures within the university

Pastoral Care

- First point of contact again is typically your **academic advisor**, again they might refer you on
- Also, **student support officer** and **senior tutor**
- You'll hear in more detail tomorrow the ways university can help through e.g. **Advice and Counselling** and **Disability and Dyslexia Services**
- **FOR US TO HELP IT IS VITAL YOU INFORM US AS SOON AS POSSIBLE IF YOU ARE HAVING DIFFICULTIES**

Academic engagement

- This simply mean engaging with all aspects of your teaching and learning – attending teaching sessions, keeping up with the notes, handing in assessments
- Strong correlation between attendance and assessments and exam performance so we do monitor this
- There will inevitably be times you can't attend, and we understand this! But if engagement is consistently low, we will ask you to meet one of us so we can discuss, and **help**

Feedback

- Think about becoming a student rep
- Attend the Student Staff Liaison Committee represent your year group and report your feedback

Feedback

A yellow poster with a white central box. At the top, there are four white stars and a black squiggly line. The text 'ATTENTION SPCS STUDENTS' is in bold black letters. Two red and blue megaphones are on either side of the text. Below the megaphones, it says 'Let your voice be heard!' in a cursive font. Underneath that, it says 'Report your feedback anonymously' and 'Click the link below' followed by a blue underlined link 'FEEDBACK FORM'. At the bottom, there is a QR code. The background has a sunburst pattern and black squiggly lines at the bottom corners.

**ATTENTION SPCS
STUDENTS**

*Let your voice be
heard!*

Report your feedback
anonymously

Click the link below
[FEEDBACK FORM](#)



Summary

- Keep in contact with your advisor, and respond to their emails
- Raise any issues with them that are holding back your engagement with your studies
- Reach out and ask for help early – don't suffer in silence
- **Be mindful of your well-being and know we are here to help**
- **Reminder! Dr David Mulryne, Room 512**