

# Particle Physics Summer School

A FREE three day residential summer school introducing pupils aged 14-15 to Particle Physics, Science and Engineering · St Paul's School, London · 14 to 16 July 2021



The **Particle Physics Summer School** is a **FREE** three day residential course for pupils aged 14-15 (at the end of year 10 or equivalent) that is being run at St Paul's School in London. The course is organised and run in partnership between St Paul's School and Queen Mary University of London. It brings to life the complex subject of particle physics by showing the importance of the field across the sciences, engineering and computer science. We explore the subject through workshops and lectures which also demonstrate the importance of research to the way we live our lives as well as highlighting the broad range of exciting careers available in the field.



The course will comprise of talks, lectures, question and answer sessions and importantly hands-on experiments (some that they may never meet at school, and some that they will definitely not meet at school!). Small groups of students will be allocated an A-Level student mentor who will take them to each of the activities and encourage them to question and investigate as a group. Evenings will be informal but involve challenges, a quiz and an invited talk.



The residential aspect will give the students time to absorb the information, get to know other people from across the country and be part of an academic 'conference' environment. Participants will remain on site for the whole school, staying in the school's boarding house with a full pastoral care package with all meals and refreshments included.



This unique course is open to 24 non-fee paying school pupils from across the UK and is **free** to attend. A maximum of three pupils from any one school may attend and places will be allocated on the basis of a simple application form requiring a short statement from both pupils and teachers. We would encourage pupils with a keen interest in STEM and particle physics in particular to apply.

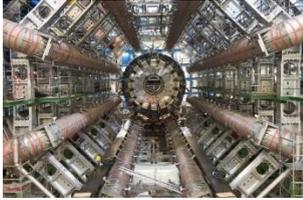
## Funding

To enable pupils from all backgrounds and across the entire country to apply and attend we are able to offer a number of bursaries of up to £100 to cover travel expenses which can be applied for upon a successful application.

## Course Overview and Provisional Timetable for 2021



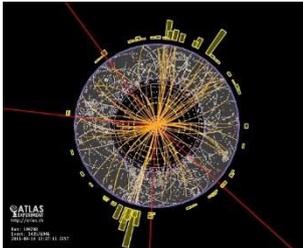
The course will be a blend of lectures, lab classes and workshops led by experts in their field and supported by young people who will act as mentors to the groups. All of the sessions have been designed to add breadth and depth to the learners' existing knowledge and showcase how they might make a difference to the world they live in through research in the future.



Participants will be split into groups of six for the parallel sessions and will be encouraged to participate actively and ask probing questions.

### Day 1 – Weds 14<sup>th</sup> July

Participants should aim to arrive after lunch between 14:00 and 14:30 to allow time to drop bags in the boarding house. Please note that lunch will NOT be provided on arrival.

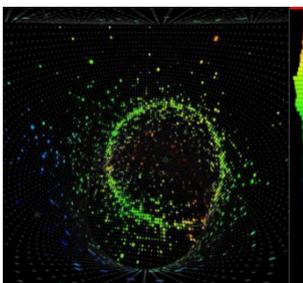
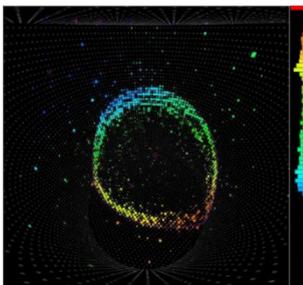


- 1400 Arrival and refreshments
- 1445 Welcome and introductions
- 1500 Introduction to particle physics
- 1545 Introduction to Crest Award
- 1615 Time to settle into your room
- 1700 Lecture
- 1800 Dinner and team building
- 2000 Quiz and free time
- 2200 Lights out



### Day 3 – Fri 16<sup>th</sup> July

- 800 Breakfast
- 900 Intro
- 915 Lecture
- 1000 Parallel
- 1045 Break
- 1100 Parallel
- 1145 Parallel
- 1230 Lunch
- 1330 Careers Talk
- 1445 Feedback and awards
- 1500 Crest award final details
- 1530 Course ends and pick up



### Day 2 – Thurs 15<sup>th</sup> July

- 0800 Breakfast
- 0900 Intro
- 0915 Lecture
- 1000 Parallel
- 1045 Break
- 1100 Lecture
- 1145 Parallel
- 1230 Lunch
- 1330 Lecture
- 1445 Parallel
- 1500 Break
- 1515 Parallel
- 1600 Parallel
- 1645 Summary
- 1700 Free time
- 1800 BBQ
- 1900 Evening entertainment
- 2000 Free time
- 2200 Lights out

The parallel sessions are workshops with hands on activities and experiments. They are designed to provide participants with a tangible understanding of some of the more abstract and complex topics covered in the lectures.

All of the pupils attending the course will receive a comprehensive participant pack with all the information they will need to work through the various activities.

### Accommodation

The participants will remain onsite for the duration of the school and will be staying in the school's on-site boarding house which comprises of single bedrooms and shared bathrooms. Boys and girls will be accommodated on different floors and both male and female staff will be resident in the boarding house for pastoral care outside of the formal teaching.

These staff members are heavily involved in running the course so any children with issues or concerns will have a familiar face to approach at any time of the day. All meals and refreshments will be served on-site and special dietary requirements can be catered for. We ask that students do not bring money as all drinks and snacks are included and they will not have the opportunity to leave the school site.

There is the expectation that behaviour is appropriate to the residential course and students may be required to leave in the event of unacceptable behaviour.

## **What to bring**

Participants will need to bring enough clothes to last the duration of the three day course. Clothing must be suitable for work in a school laboratory and footwear should enclose the feet – no open toed shoes, sandals or flip-flops! Any specific safety wear, such as lab coats, will be provided where necessary. Participants should also bring toiletries and a towel. Duvets, pillows and bedding will be provided.

We recommend that participants DO NOT bring electronic devices, such as tablets and games consoles, on the course as there will be little time for them to be enjoyed. If students bring along a mobile phone they are responsible for looking after it and keeping it safe. The organisers will not be liable for items lost or damaged during the course. All information, materials and handouts will be provided on arrival.

## **Directions**

St Paul's School can be found at: **Lonsdale Road, Barnes, and London, SW13 9JT**. The closest underground station is Hammersmith which is approximately a 20 minute walk from the school, this is closer than the nearest over ground station. Maps and directions of how to find us can be found at <https://www.stpaulsschool.org.uk/getting-here/>

Parking is available on site for drop off and pick up. Participants will be directed to the registration point where they can drop off their bags before the first lecture.

## **About us**



**Ms Janet Mee**

**Dr Ben Still**

[SummerSchools@stpaulsschool.org.uk](mailto:SummerSchools@stpaulsschool.org.uk)



**Dr Seth Zenz**

**Dr Alison Elliot**

### **St Paul's School ([www.stpaulsschool.org.uk](http://www.stpaulsschool.org.uk))**

St Paul's School is an independent school for boys aged 13 to 18, founded in 1509 and located just south of the River Thames in London. The School has recently opened a new science block; each floor is purpose built and specially resourced to deliver one of the three curriculum sciences.

The Physics department benefits from a dedicated research lab that can act as a hub for school-age researchers. The school has recently invested in a state-of-the-art tabletop scanning electron microscope (SEM) with x-ray characterisation for pupils to use in their studies.

The school has runs highly successful outreach programs in biology, chemistry and physics where sixth form students deliver exciting activities. Many of the experiments on the course have been tried and tested during these sessions. It is hoped that the pupils attending the course and their schools will continue to build a relationship with St Paul's so that they can use the facilities, such as the SEM and research hub, and get involved with the National Centre for Science and Engineering Research in Schools Characterisation Hub.

### **Queen Mary University of London**

([pprc.qmul.ac.uk](http://pprc.qmul.ac.uk))

Queen Mary University of London is one of the UK's leading research universities, committed to improving social justice and achieving the previously unthinkable. A Russell Group university based in east London, we teach across the full disciplinary spectrum. With staff and students from over 160 nationalities, we are one of the most diverse higher education institutions in the world.

The Particle Physics Research Group in the School of Physics and Astronomy conducts internationally recognised research across many different fields of particle physics. The group takes leadership roles in the ATLAS experiment at the Large Hadron Collider at CERN as well as the Deep Underground Neutrino Experiment (DUNE) In the USA. The group's expertise range across the discipline from theory to computing and experimental hardware.

Any further questions email us at [summerschools@stpaulsschool.org.uk](mailto:summerschools@stpaulsschool.org.uk)