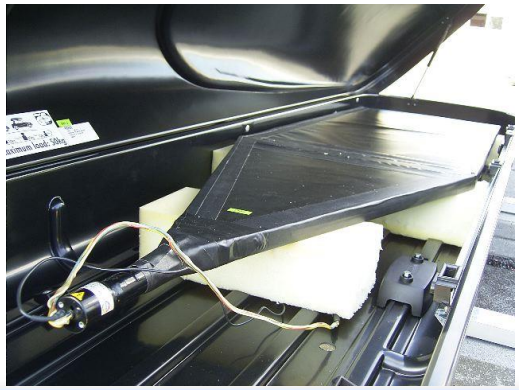
Secondary schools

UNIVERSITY OF BIRMINGHAM | SCHOOL OF PHYSICS AND ASTRONOMY

THE INSTITUTE for RESEARCH in Schools

HiSPARC: enquiry based project for High Schools, a project of The Institute for Research in Schools http://www.researchinschools.org/

An opportunity to involve students in real research



The project is a study of high energy cosmic rays as detected by a particle detector installed in the school. The detector is provided by the HiSPARC collaboration and arrives as a DIY kit that is assembled and placed on the school's roof, with advice and help from the HiSPARC collaborators and researchers here on campus. Students, guided by the University staff and their teachers, access the cosmic ray data using a computer and learn how to statistically analyse in order to discover patterns and answer long standing questions on cosmic rays.

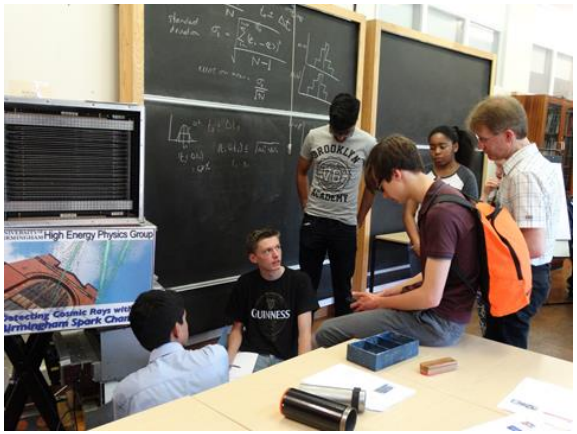
To find out more please visit:
http://www.birmingham.ac.uk/schools/physics/outreach/Secondary-Schools/HiSPARCproject.aspx

UNIVERSITY OF BIRMINGHAM | SCHOOL OF PHYSICS AND ASTRONOMY

Physics Experience Week

for students in year 10 and year 11; a selection process applies

Applications deadline: **31 December 2019**
Event runs: **22-26 June 2020**



"I enjoyed Thinking like a Theorist and Scientific communications. I also enjoyed the lecture about nuclear reactions."

"It has encouraged me to want to continue Physics in the future and incorporate it into my career."

For more information please visit: http://www.birmingham.ac.uk/schools/physics/outreach/Secondary-Schools/physics-experience-week.aspx

UNIVERSITY OF BIRMINGHAM | SCHOOL OF PHYSICS AND ASTRONOMY

Residential Physics Summer School

for students in year 12 studying physics and maths (no selection process)

Applications deadline: **18 May 2020**
Event runs: **1-2 July 2020**

“Thank you for a brilliant two days at the Physics Summer School! It was really interesting and I met some great people.”

- Team challenge activities
- Lectures and workshops
- Rocket Challenge
- Out in the City
- Hands on Lab work in the undergraduate laboratories

For more information please visit:
http://www.birmingham.ac.uk/schools/physics/outreach/Secondary-Schools/summer-schools.aspx

UNIVERSITY OF BIRMINGHAM | SCHOOL OF PHYSICS AND ASTRONOMY

SKYPE links to your classroom

Bring a researcher into your classroom to talk to your students about the research they do, and to answer questions related to the topic they are studying as part of the A Level or GCSE curriculum in the classroom. This is a new initiative to enhance your lessons and illustrate in a real way “how science works”.

We have a number of researchers you can contact directly by e-mail to arrange a SKYPE link of 15 – 20 minutes. Your students should be studying a relevant topic and have their questions prepared in advance of the link. Once the link is made, the researcher will introduce themselves and say a little bit about their work. Then the students will have an opportunity to ask their questions.

Please talk in advance to your school IT technicians and get advice about setting up a link, then e-mail the researcher to set up a time and date.

For more details please visit

http://www.birmingham.ac.uk/schools/physics/outreach/Secondary-Schools/ask-a-researcher.aspx

Dr Tzany Kokalova Wheldon

Prof Cristina Lazzeroni

Dr Amaury Triaud

Prof Andreas Freise

UNIVERSITY OF BIRMINGHAM | SCHOOL OF PHYSICS AND ASTRONOMY

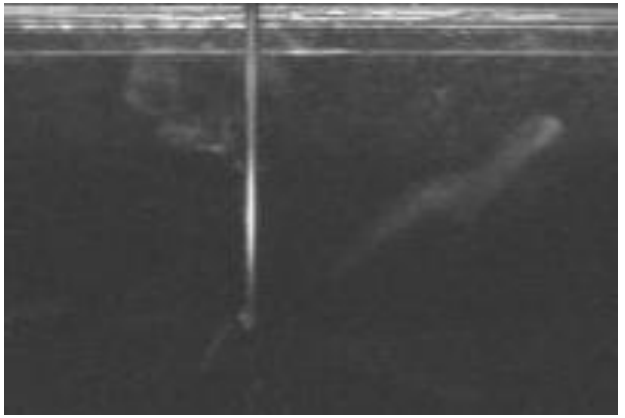
Cloud chambers for schools

Cloud chambers based on a simple, but effective, design, have been built by members of the Elementary Particle Physics Group at the University of Birmingham, and are available for demonstrations at schools. A cloud chamber can be loaned for up to two weeks at a time, for a nominal hire cost of £10.00 per week (longer hires are more expensive).

Full details, and general suggestions for experiments and measurements linked to the school curriculum, are given in the Cloud-Chamber Manual.

Teachers may also ask for a researcher from the Elementary Particle Physics Group to come to their school to give a demonstration of the cloud chamber, and answer questions from students.

For more details about the loan scheme, or to request a demonstration, please contact Prof Cristina Lazzeroni (cl@hep.ph.bham.ac.uk).



UNIVERSITY OF BIRMINGHAM | SCHOOL OF PHYSICS AND ASTRONOMY

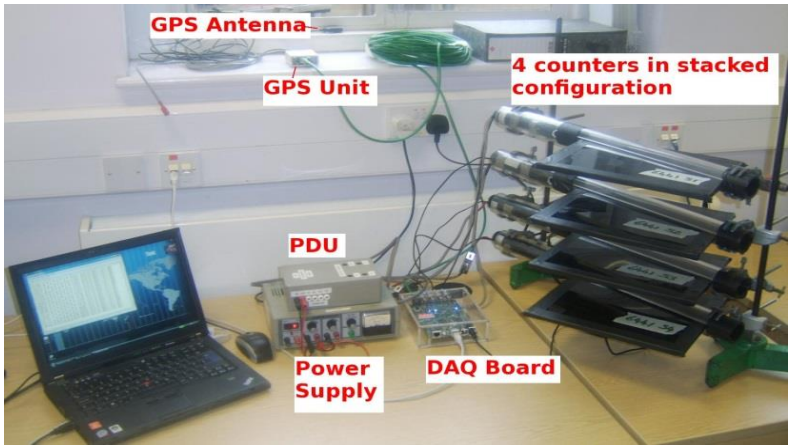
Cosmic Ray Telescopes for schools

The Birmingham QuarkNet Project in Schools: At the University of Birmingham, we currently have several cosmic ray telescopes which we would like to loan to schools so that they can run a QuarkNet project.

Along with the detectors we will also provide worksheets which have been written by the University of Birmingham. These will provide full details of how to use the detector and will take students through all the different experiments they can carry out.

For more information about the Birmingham QuarkNet project, please contact Dr John Wilson (jaw@hep.ph.bham.ac.uk)

For more information on equipment loan please visit:
http://www.ep.ph.bham.ac.uk/twiki/bin/view/General/QuarkNet



Primary schools

UNIVERSITY OF BIRMINGHAM | SCHOOL OF PHYSICS AND ASTRONOMY

CREATIONS
Developing an Engaging Science Classroom

Clocks and Gears Workshop

A workshop explaining:

- how clocks worked through the ages; from sundials and hour-glasses to ancient Greek water clocks that used gears
- the mathematics and science of interlocking gears

Hands-on activities:

- making a wind-up clock with fifteen gear wheels
- discovering the scientific pattern between the length of the clock's pendulum and the time of its swing

UNIVERSITY OF BIRMINGHAM | SCHOOL OF PHYSICS AND ASTRONOMY

CREATIONS
Developing an Engaging Science Classroom

Particle Physics Workshop

A workshop explaining:

- How particle physicists discover the constituents of matter through particle collisions
- The families of particles in the standard model
- How particles interact with one another

Hands-on activities:

- making a model of a subatomic particle using simple materials e.g. plastic balls, plasticine, decorations
- Creating an artistic piece (poetry, music, dance, drama etc.) from a particle interaction diagram