



IPPOG Meeting November 2015 – Swindon Office Public Engagement

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CERN@School

<http://cernatschool.web.cern.ch/>

The current CERN@school projects are:

- LUCID: the Langton Ultimate Cosmic ray Intensity Detector, is a student-designed, satellite-based experiment that aims to measure properties of the space radiation environment in Low Earth Orbit (LEO) using five Timepix detectors arranged in an open-faced cube. It is currently taking data that is being analysed by the CERN@school Collaboration.
- MoEDAL: the Monopole and Exotics Detector at the LHC (MoEDAL) will look for the particles no other experiment can reach in the 13 TeV proton-proton collisions taking place in CERN's Large Hadron Collider (LHC). By classifying particle signatures recorded in real MoEDAL detector data, students can be part of the search for Paul Dirac's hypothesised magnetic monopole!
- RAY: background radiation is, by definition, everywhere; it is produced by many natural and artificial sources such as the rocks beneath the ground, cosmic rays from above, and even fallout from nuclear weapons testing. Although the overall level of background radiation is small, it is nonetheless interesting to systematically measure its properties. This is the goal of the Radiation Around You project.
- RISE: the Radiation In Soil Experiment project aims to make a radiation map of the United Kingdom (and beyond!) by analysing soil samples with the CERN@school Timepix detectors.
- TimPix: as part of Tim Peake's Principia mission, help monitor Peake radiation levels on board the International Space Station (ISS) with data from five Timepix detectors.

The second CERN@school symposium was held on the 16th September 2015 at Queen Mary University of London. During the conference student talks and posters were given on all the projects above and a particularly interesting (unexplained) high background radiation measurement in the Elan Valley in Wales. The key note talk was given by Prof Larry Pinsky from NASA on 'Past Results and Future Plans by NASA for Medipix Detectors in Space' and Dr Michael Campbell, head of the Medipix collaboration at CERN handed out the participation certificates and gave the ending address.

Touring LHC Roadshow

<http://www.stfc.ac.uk/news-events-and-publications/events/stfc-events/large-hadron-collider-roadshow/>

The renovated STFC LHC Roadshow has been touring the country appearing at the Harwell open week – during which 16,000 people visited RAL, as well as visiting the National Assembly for Wales, Cardiff and the Scottish Parliament at Holyrood, Edinburgh.

School visits to CERN

Schools who are visiting CERN continue to receive the STFC resource pack before they go and a certificate of achievement when they return. We have also started contacting Members of Parliament local to the schools visiting CERN to invite them to visit CERN at the same time. Nine MPs have replied so far: three are interested in visiting CERN and two have been put in touch with the schools to find out more. Feedback on CERN visits continues to be good with 99% of teachers saying they found the visit useful and 91% that they found the visit enjoyable. 91% of teachers said they intended to bring another group to CERN.



Masterclasses

In 2015 STFC supported three A level remote particle physics masterclass as part of our commitment to provide outreach opportunities to groups in areas geographically remote from STEM activity. The first masterclass was held in Southend in February, the second was held in June in North Wales and the third was held in Cornwall in July. All these events were extremely successful with 120 students attending in total. Particle physicists from UCL, Bristol, Manchester, Victoria (Canada) and Plymouth contributed talks and activities for the masterclasses. The national programme of masterclasses and particle physics outreach events in the UK continue to inspire and involve schools and the public with approximately 2500 students attending masterclass in 2015 and about 2000 others attending particle physics related outreach events across the country.

STFC Public Engagement Funding Schemes

2015 Small Awards A	
Dr Suzie Sheehy University of Oxford LHComedy: UK - The creation of a sustainable interactive comedy show that guides the audience through the scientific methodology	This project will create a live, interactive comedy that will engage audiences with high level science and the science methodology by: 1) Improving the engagement of the public with science by introducing audiences to the methodology. 2) Providing an engaging and interactive method for teaching GCSE level students the 'How science works' parts of the exam board specifications. 3) Encouraging the learning of scientific skills. 4) Demystifying seemingly complex scientific concepts and encouraging future engagement and study. 5) Showcasing the LHC as a direct flagship STFC project
2014/15 Large Awards	
Howard Miller Howard Miller Design Ltd/National Schools' Observatory Dark Matter Show Garden at the RHS Chelsea Flower Show 2015	Building on the success of its eclectic team at previous Royal Horticultural Society shows, Howard Miller Design exhibited a garden in the 'Fresh' category at Chelsea Flower Show 2015 on behalf of the National Schools' Observatory. The garden provided a dramatic artistic and architectural interpretation of the effect of Dark Matter via gravitational lensing. By approaching one subject (astronomy) through the medium of another (a garden). This garden won a gold award at the RHS and is now located at Daresbury Laboratory.
Public Engagement Fellowships	
Dr Tom Whyntie Queen Mary, University of London CERN@school and GridPP: harnessing the power of the Worldwide LHC Computing Grid for research in schools and beyond	Through the CERN@school programme this fellowship aims to: <ul style="list-style-type: none"> - Engage schools with the cutting-edge physics research supported by STFC - Promote careers in science by engaging students with the research process - Provide an innovative CPD programme for teachers through STFC-supported research - Engage new users with the Worldwide LHC Computing Grid via the GridPP Collaboration
Ongoing: Professor Alan Barr	Website now up and running: http://www.higgshunters.org/ This is the first Citizen Science project for the Large Hadron Collider.



University of Oxford Particle detective: a citizen science project for the Large Hadron Collider	Citizen Science allows you, whoever you may be, to engage directly in the scientific process itself. This project allows you to analyse the data from the Large Hadron Collider, and to identify features which may be indicative of particles or processes not yet known to science. By studying images of collisions from the ATLAS experiment you can observe the debris from the collisions, and search for long-lived particles which may (or may not) be being produced in the High Energy Collisions at the LHC.
On-going: Dr Cristina Lazzeroni University of Birmingham Particle Interactions	Dr Cristina Lazzeroni aims to create interactions between University researchers, school communities and the broader public, to give as large an audience as possible the chance to be involved with hands-on particle-physics activities. She will be working with school groups on studies of cosmic rays, will be organising masterclasses for teachers, and will be staging interactive exhibits at Science Festivals across the country.

Useful Websites

CERN@school: <http://cernatschool.web.cern.ch/>

LHC roadshow: <http://www.stfc.ac.uk/news-events-and-publications/events/stfc-events/large-hadron-collider-roadshow/>

STFC PP Masterclass page: <http://www.stfc.ac.uk/public-engagement/for-schools/particle-physics-masterclass-programme/>

STFC Public Engagement funding: <http://www.stfc.ac.uk/pefunding>

STFC Public Engagement fellows: <http://www.stfc.ac.uk/funding/fellowships/public-engagement-fellowships/public-engagement-fellows/>

Higgs Hunters: <http://www.higgshunters.org/>