

The Large Hadron Collider Production of Educational Resources

The Science and Technology Facilities Council (STFC) wishes to produce a package of educational resources for schools and colleges based on the Large Hadron Collider (LHC) project at CERN.

The LHC at CERN, the European Laboratory for Particle Physics in Geneva, is due to start operating in late 2007. It will be one of the biggest experiments in the history of science and will address fundamental questions about the nature of matter and the physics of the Universe. Physicists from all over the world, with strong representation from the UK, are participating in this world-leading experiment.

For further information see

<http://public.web.cern.ch/Public/Content/Chapters/AboutCERN/CERNFuture/LHCExperiments/LHCExperiments-en.html>.

The Science and Technology Facilities Council (STFC) is funding a four-year programme of carefully targeted initiatives to increase both public knowledge and support for this branch of physics. Part of this programme, will use the excitement engendered by the LHC to inspire young people about science and thereby support increased science literacy and recruitment to science courses, especially undergraduate physics courses.

The strategy for STFC's LHC Communications Programme is on the web at <http://www.scitech.ac.uk/PandS/SinS/Repts/LHCCom/LHCCom.aspx>.

STFC has published a report 'Formative Evaluation of the Large Hadron Collider Communication Project' based on interviews with the public, teachers and students. This is on the web at <http://www.scitech.ac.uk/PMC/Publ/LHC.aspx>.

The Resource Package:

The resource package will enable teachers to use the LHC as a context for teaching and help them to convey the excitement of the project to students aged 11-18.

In particular:

- The main target audience will be students aged 14-18, as this is the age group where initial and formative decisions about future education and career paths are made. Students aged 16-18 will already be studying science at post-GCSE-level and we wish to encourage them towards a career in the physical sciences. Students aged 14-16 will be making choices about study post-16 and we wish to encourage them to choose science and especially physics and mathematics.
- Another important audience, though of slightly lower priority, is gifted 12-14 year-olds who have an interest in the 'big questions' that physicists are trying to answer.
- The resources will include material suitable for all the audiences identified above. They need to be appropriately differentiated for use by different age groups and abilities.

- The resources should link, where possible, to UK national curricula.
- The physics of the LHC experiments appear largely in the post-16 curriculum. For use at younger ages, it will be necessary to consider 1) linking the material to non-specific aspects of the curriculum, such as 'How Science Works', 2) using the LHC as an example of phenomena that feature earlier in the curriculum and 3) using the LHC project as stimulus material to debate the role of science in society.
- The LHC project provides an opportunity to develop materials that support career choices for students (targeted to science teachers rather careers advisors). Consideration should be given to using individual scientists and engineers as role models in career case studies.
- It is impossible to predict the timing and extent of media coverage of the LHC project and its discoveries, but undoubtedly there will be opportunities to link school science with 'science stories in the media'. Materials might include opportunities to link with anticipated current news stories.
- In producing materials, consideration should be given to the use of modern ICT, for example the use of interactive white boards. Many exciting images are available. Much of the science of the LHC is best addressed through simulations and animations.
- Innovative approaches are strongly encouraged.

The materials will include all teacher support materials necessary for successful use of the resources.

Materials will, wherever possible, be available in electronic as well as in printed form.

The materials must be trialled and evaluated before production.