

Scientists forecast new atom smashers to keep Europe leading in nuclear physics

December 9 2010

Europe needs new particle accelerators and major upgrades to existing facilities over the next ten years to stay at the forefront of nuclear physics, according to the European Science Foundation (ESF), which launches its 'Long Range Plan 2010' for nuclear physics today.

Nuclear physicists are working to understand the origin, evolution and nature of matter that constitutes nearly 100 per cent of visible matter in the universe. As the home of GANIL, GSI, CERN and a wide network of closely collaborating facilities, Europe is world-leader in the field. During the decade ahead researchers are going to build on tackling the big questions: how did matter in the Universe evolve into what we see today and whether this knowledge can be used to help solve energy, health and environmental problems.

"Nuclear physics projects are 'big science', with large investments and long lead times that need careful planning and strong political support," said Guenther Rosner, Chair of the Nuclear Physics European Collaboration Committee (NuPECC) of the ESF. "We can already see where Europe needs to be targeting funds to stay at the forefront. In particular, we need to both upgrade our major facilities and invest in new central research infrastructures offering more intense [antimatter](#) and rare isotope beams."

The report details three major routes forward for nuclear physics, all of which will require powerful new accelerator facilities. It proposes a concrete roadmap for upgrading existing, and building new, powerful

nuclear physics facilities so that funding agencies can target their support.

Rosner comments: "This is an immensely important and challenging task that requires the effort of both theoretical and experimental scientists, funding agencies, politicians and the public."

Nuclear technology offers a source of low-carbon energy as well as its use in [medical diagnosis](#) and cancer therapy, security detectors, materials studies and artefact analysis. [Nuclear physics](#) trains people in advanced techniques that are transferred to these industries. Enhancing this skills base will ensure that these organisations continue to have access to the expertise they need.

More information: The 'NuPECC Long Range Plan 2010 – Perspectives of Nuclear Physics in Europe' results from a collaboration of the entire European nuclear physics community. It is available online: www.esf.org/publications

Provided by European Science Foundation

Citation: Scientists forecast new atom smashers to keep Europe leading in nuclear physics (2010, December 9) retrieved 26 April 2024 from <https://phys.org/news/2010-12-scientists-atom-smashers-europe-nuclear.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.