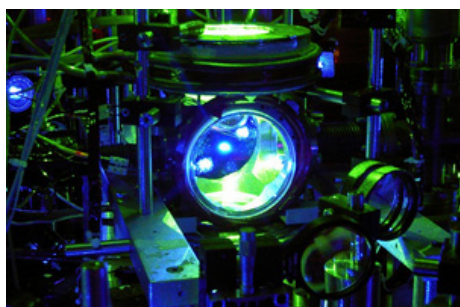


NEWS**EU Collaboration****ITALY IN THE ESS PROJECT**

In the autumn, implementation of the most powerful neutron source in the world will begin in Lund, Sweden. The project is called European Spallation Source (ESS) and Italy is participating with the Ministry of Education, University and Research (MIUR), INFN, the National Research Council (CNR) and Elettra Sincrotrone Trieste.

ESS will represent a state-of-the-art infrastructure and the results of

the multidisciplinary research that will be carried out thanks to the neutron source will contribute to improve research activities in various sectors of knowledge growth and of its application sectors: from life sciences, materials chemistry, energy research, study of magnetic and electronic phenomena, materials engineering, archaeology and preservation of the cultural heritage, to fundamental and particle physics.

**Science****A "QUANTUM TRAP" FOR GRAVITY**

Measurement of the gravitational constant G , a challenge that has involved scientists from all over the world for over two hundred years, is getting increasingly closer to the exact value. The results, published in *Nature*, were achieved with the Magia experiment by researchers at the INFN and the European Laboratory for Non-Linear Spectroscopy (LENS). The study used an innovative atomic interferometry technique, exploiting the wave-particle duality of

matter: a number of Rubidium atoms were dropped and then cooled to a temperature close to absolute zero, in order to slow down their motion to a speed of a few millimetres per second. At this speed the atoms behave as waves and can be studied with an interferometer: the variation in their acceleration was measured by comparing their interference in the Earth's gravitational field with that obtained when the atoms interact with a reference gravitational field, generated by a 500 kilogram mass of tungsten.

**Dissemination****"ITALY OF THE FUTURE" IN STOCKHOLM**

During the Italian Presidency Semester of the EU Council, the Ministry of Foreign Affairs is promoting the new 2014 edition of the "Italy of the future" exhibition. The first stop of the exhibition is in Stockholm, where it will remain open until 24 August. Implemented thanks to the collaboration between INFN, the National Research Council (CNR), the Italian Technology Institute (IIT) and the Scuola Superiore Sant'Anna of Pisa, the exhibition aims to divulge Italy's



scientific excellence abroad. This new edition of "Italy of the future" will cover, in particular, robotics, particle physics and new technologies for the restoration and preservation of the archaeological and cultural heritage. The exhibition will include, among others, a virtual tour of the INFN's Gran Sasso National Laboratory and the presentation of the iCub humanoid robot, which is the size of a three-year-old child and can hear, see and carry out actions autonomously.