



## RESEARCH INFRASTRUCTURES

### HI-LUMI LHC: THE FIRST MADE IN ITALY PROTOTYPES FOR FUTURE SUPERCONDUCTING MAGNETS SUCCESSFULLY TESTED

It will be the successor of LHC, at the end of its scientific programme; it will be the biggest particle physics project of the next few years.

For its implementation, the INFN scientific community has already been at work for some time with Italian industry. The project is High Luminosity LHC and will strengthen the CERN superaccelerator so as to increase its luminosity - one of the main performance indicators for a particle accelerator. The challenge for its implementation is to develop cutting-edge technology, not yet available “on the market”. The first Made in Italy results come from the INFN Genoa Division with ASG Superconductor, a leading company internationally for superconducting magnets, and from the INFN LASA Laboratory - Laboratory for Accelerators and Applied Superconductivity - and the University of Milan, with SAES RIAL Vacuum di Parma, a very innovative company in vacuum systems and cryogenics used in accelerators and research. Over the last few months, tests for checking the operation of one of the superconducting magnets, which will be part of the LHC upgrade for Hi-Lumi, were successfully conducted at CERN. The magnet concerned is a prototype with reduced length of so-called D2 magnets that, generating a magnetic field of 4.5 Tesla in an opening of 105 mm, have the function of directing beams to the collision points and then separating them. Again, in the context of the Hi-Lumi LHC upgrade, the LASA Laboratory is looking after the production and testing of 54 corrector magnets, divided into five families of 4, 6, 8, 10 and 12 magnetic poles. The magnets are being manufactured at Saes Rial Vacuum in Parma according to INFN’s design. The first magnet in sequence, a ten-pole magnet, has easily passed the acceptance tests at LASA. ■