



RESEARCH

IN THE POOL TO TEST JUNO'S ELECTRONICS

From 23rd to 25th May, researchers from the INFN division of Padua and the University of Padua successfully tested the data acquisition electronics of the JUNO (Jiangmen Underground Neutrino

Observatory) detector, a next-generation neutrino physics experiment under construction in southern China, in the Guangdong region. Carried out as part of the project to develop and build the detector's electronic component, in which the INFN is lead partner together with the Chinese Academy of Science, the tests were executed at the Y-40 facility in Montegrotto Terme (PD), the deepest thermal water pool in the world. The context is similar to that in which JUNO's electronics will operate: a tank containing 20,000 tonnes of liquid scintillator, a medium capable of highlighting the passage of neutrinos with the emission of photons, the latter detected by more than 40,000 photomultipliers. Once completed, JUNO, which will be the largest detector of its kind in the world, will use neutrinos produced in two nuclear power plants to measure their energy with unprecedented precision, in order to study and explain the difference between the masses of the three types (flavours) of neutrinos that exist in nature (mass hierarchy).

In addition to its fundamental involvement in the development and realisation of the photomultiplier electronics, INFN is one of the international members of the JUNO collaboration, taking part in it with the divisions of Padua, Ferrara, Catania, Milan, Milan Bicocca, Perugia, Rome 3 and the National Laboratories of Frascati (LNF). The electronics project was listed by the Italian Ministry of Foreign Affairs and International Cooperation (MAECI) among the major projects between Italy and China in 2018 and jointly funded with the National Natural Science Foundation of China (NSFC) for the successive three years. The project was born and developed within the collaboration between the INFN Padua division and the Institute of High Energy Physics (IHEP) in Beijing. ■