



RESEARCH

THE DAMPE SPACE MISSION REVEALS NEW PROPERTIES OF COSMIC GALACTIC RAYS

At the end of September 2019, the DAMPE (DARk Matter Particle Explorer) experiment, in orbit around the Earth since December 2015, published on Science Advances the direct measurement of the flow of cosmic protons up to high energies, in the range of 100 TeV (approximately 100,000 times the energy corresponding to the resting mass of a proton). Protons are the main component of cosmic rays and, to date, no apparatus had ever directly measured the intensity of their flow with such accuracy and at such high energies. In detail, DAMPE has found an unexpected behavior: the flow of protons, which decreases continuously with increasing energies, around 10 TeV has a much more marked attenuation than expected. Other experiments have previously explored this energy region but with less precise results due to both statistical and systematic uncertainties.

DAMPE was launched into orbit in December 2015 by the Chinese Space Agency aboard the Long March 2D vector with the scientific goal of searching for dark matter by studying high-energy astroparticles, in particular the flow of cosmic rays that comes incessantly to our planet. The experiment is an international collaboration among the National Institute of Nuclear Physics (INFN) - with the divisions of Perugia, Bari and Lecce and the GSSI - the Chinese Academy of Sciences (CAS), the Universities of Perugia, Bari and Salento, and the University of Geneva. The collaboration is led by the Purple Mountain Observatory (PMO) of Nanjing and counts more than 100 participants among researchers, technicians and PhD students. ■