



RESEARCH

NEW RESULTS FOR DAMA/LIBRA-PHASE2

The international collaboration DAMA, operating at the INFN Gran Sasso National Laboratories (LNGS), has recently presented to the LNGS Scientific Committee the first results obtained by the DAMA/LIBRA-Phase2 detector. The experimental approach employed by the experiment is based on the study of the model independent signature of the annual modulation of dark matter's signal, consequent to the Earth's movement with respect to the dark matter particles in the galactic halo. DAMA/LIBRA-Phase2 is equipped with an extremely radiopure detector, whose sensitive part is a modular structure of 25 detectors of scintillating thallium-doped sodium iodide. The recent results are based on data acquired on 6 independent annual cycles and confirm the evidence of a signal that meets the requirements of an annual modulation signature, with a high level of confidence (9.5 sigma) in the energy region of the software threshold between 1 and 6 keV. Furthermore, by combining the experimental data, a confidence level equal to 12.9 sigma was reached in the energy region between 2 and 6 keV, where the data are also available from the previous experiments DAMA/NaI and DAMA/LIBRA-Phase1. The DAMA scientific collaboration have therefore explained that the measured modulation parameters are consistent with those expected for dark matter particles; that there are no available systematic effects or competing processes able to quantitatively account for the amplitude observed and to simultaneously satisfy all the requirements of the signature; that the model independent result is compatible with a set of theoretical and phenomenological models. ■