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DAMA/LIBRA RESULTS AND PERSPECTIVES OF THE SECOND STAGE

The DAMA/LIBRA experiment is mainly dedicated to the investigation on DM particles in the Galactic halo by exploiting the model independent Dark Matter (DM) annual modulation signature. The present DAMA/LIBRA and the former DAMA/NaI (exposed masses: about 250 kg and about 100 kg of highly radiopure NaI(Tl), respectively) experiments have released so far a total exposure of $1.17 \text{ t} \cdot \text{yr}$ collected over 13 annual cycles; they provide a model independent evidence of the presence of DM particles in the galactic halo at 8.9σ C.L. The data of another annual cycle in the same DAMA/LIBRA running conditions are at hand. After the substitution (at fall 2010) of all the photomultipliers (PMTs) with new ones, having higher quantum efficiency, DAMA/LIBRA has entered the phase 2; that substitution has allowed to lower the software energy threshold of the experiment in the present data taking. Future perspectives are mentioned.

Keywords: Dark Matter, annual modulation, NaI(Tl) scintillator.