

RESULTS ON DARK MATTER BY DAMA/LIBRA AT GRAN SASSO

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DAMA/LIBRA is running at the Gran Sasso National Laboratory of the I.N.F.N. The data collected in the first six annual cycle have already been released. The cumulative exposure – including that of the former DAMA/NaI experiment ($0.29 \text{ t} \cdot \text{yr}$) – is now $1.17 \text{ t} \cdot \text{yr}$, corresponding to 13 annual cycles; this exposure is orders of magnitude larger than the exposures typically collected in the field. The data further confirm the model independent evidence of the presence of Dark Matter (DM) particles in the galactic halo on the basis of the DM annual modulation signature (8.9σ C.L. for the cumulative exposure). In particular, the modulation amplitude of the *single-hit* events in the (2 - 6) keV energy interval measured in NaI(Tl) target is $(0.0116 \pm 0.0013) \text{ cpd/kg/keV}$, the measured phase is (146 ± 7) days and the measured period is $(0.999 \pm 0.002) \text{ yr}$, values well in agreement with those expected for the DM particles. Various related arguments are addressed.

Keywords: dark matter, experiment DAMA/NaI, DAMA/LIBRA.