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Bayesian analysis of the DAMA/LIBRA data

The DAMA/LIBRA experiment has been claiming evidence for annual modulation for over 20 years, which they argue is evidence for dark matter WIMP interactions in the detector. However, this result has not been confirmed by any other experiment. We carry out a Bayesian analysis of a search for annual modulation in the DAMA/LIBRA data, which is complementary to the frequentist tests done by the collaboration. We also search for a time-dependence of the best-fit DAMA amplitude and higher harmonics in the. We do not find any evidence for higher harmonics in the data or time-dependence of best-fit amplitude. These analyses can easily be extended to the analysis of data from other underground dark matter experiments which are looking for such an annual modulation.

Email

shntn05@gmail.com

Affiliation

IIT Hyderabad

Author: DESAI, Shantanu (LMU)

Presenter: DESAI, Shantanu (LMU)

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