Contribution ID: **23** Type: **Contributed talk**

DAMA confronts null searches in the effective theory of dark matter-nucleon interactions

Monday 25 July 2016 16:45 (15 minutes)

Summary

We examine the dark matter interpretation of the modulation signal reported by the DAMA experiment from the perspective of effective field theories displaying Galilean invariance. We consider the most general effective coupling leading to the elastic scattering of a dark matter particle with spin 0 or 1/2 off a nucleon, and we analyze the compatibility of the DAMA signal with the null results from other direct detection experiments, as well as with the non-observation of a high energy neutrino flux in the direction of the Sun from dark matter annihilation. To this end, we develop a novel semi-analytical approach for comparing experimental results in the high-dimensional parameter space of the non-relativistic effective theory. Assuming the standard halo model, we find a strong tension between the dark matter interpretation of the DAMA modulation signal and the null result experiments. We also list possible ways-out of this conclusion.

Based on (arXiv number)

1602.04074

Author: Mr WILD, Sebastian (TU Munich)

Presenter: Mr WILD, Sebastian (TU Munich)

Session Classification: Direct Dark Matter Detection

Track Classification: Direct Dark Matter Detection