High Energy Physics - Phenomenology

Can CoGeNT and DAMA Modulations Be Due to Dark Matter?

Marco Farina, Duccio Pappadopulo, Alessandro Strumia, Tomer Volansky

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We explore the dark matter interpretation of the anomalies claimed by the DAMA and CoGeNT experiments, in conjunction with the various null direct-detection experiments. An independent analysis of the CoGeNT data is employed and several experimental and astrophysical uncertainties are considered. Various phenomenological models are studied, including isospin violating interactions, momentum-dependent form factors, velocity-dependent form factors, inelastic scatterings (endothermic and exothermic) and channeling. We find that the severe tension between the anomalies and the null results can be ameliorated but not eliminated, unless extreme assumptions are made.

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