ID de Contribution: **262** Type: **Non spécifié**

Dark Matter Direct Detection Using Bilayer Graphene

A variety of detection techniques employing different materials has been suggested for the direct detection of low-mass galactic dark matter particles, which fall below the sensitivity of traditional direct detection experiments. Bilayer graphene is one such material that has been proposed for the detection of sub-MeV mass dark matter particles through electronic excitations. In this work, we extend the calculations for dark matter–electron scattering via a massive mediator in bilayer graphene. Using a tight-binding model of bilayer graphene, we calculate its dielectric function in the random phase approximation and project its sensitivity for a 10 mg year exposure, assuming zero backgrounds. We also show the sidereal daily modulation of the scattering rate and its dependence on the orientation of bilayer graphene with respect to the galactic dark matter wind. This modulation in scattering rate can be used to separate the dark matter signal from backgrounds.

Auteur: M. SHERPA, Rinchen (Indian Institute of Science)

Co-auteurs: Dr DAS, Anirban (Saha Institute of Nuclear Physics); M. SARKAR, Anuvab (Indian Institute of Science); Dr DUTTA, Paramita (Physical Research Laboratory); Dr LAHA, Ranjan (Indian Institute of Science); Dr MAITY, Tarak Nath (University of Sydney)

Orateur: M. SHERPA, Rinchen (Indian Institute of Science)

Classification de Session: Astrophysics & Multi-messenger