

Dark magnetic dipole property in fermionic absorption

Thursday, August 11, 2022 2:30 PM (15 minutes)

In this talk, I will present our recent work [arXiv: 2201.11905] about detecting the dark magnetic dipole through fermionic dark matter (DM) absorption. In this work, we propose a Dirac fermion DM charged under a dark gauge group and with the dark magnetic dipole operator. Under the mixing of DM and right-handed neutrino, it induces the process that the incoming DM is absorbed and converted into neutrino in final state through the dipole-charge interaction. Such absorption process provides a more distinctive peak-like signal than the ordinary elastic scattering at sub-GeV scale.

Firstly, in this talk, we will quickly review the relevant studies about fermionic DM detection by others in recent years and talk about our motivation. Then we will discuss the characteristics of absorption process for nucleus and bound electron target. The procedure of our numerical calculations will also be mentioned. Finally, we will present the prospective bounds on dark magnetic dipole in the mode.

Primary author: ZHANG, RUIJIA (Nankai University)

Co-authors: Dr LIAO, JIAJUN (Sun Yat-Sen University); Dr LI, TONG (Nankai University)

Presenter: ZHANG, RUIJIA (Nankai University)

Session Classification: Parallel Session IX (1): TeV and BSM Physics

Track Classification: TeV 物理和超出标准模型新物理