Phenomenology 2018 Symposium



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Terrestrial effects on sub-GeV dark matter detection via electron scatterings for heavy and ultralight mediators

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The sensitivity of direct-detection experiments looking for sub-GeV dark matter is bounded below as sufficiently weakly interacting dark matter does not produce enough events to be detected. However, the sensitivity is also bounded above as sufficiently strongly interacting dark matter is slowed down below the threshold by its interactions with the medium above the experiment. The upper sensitivity limits of surface experiments are determined by the interactions of dark matter with the atmosphere and those for the deep underground experiments are determined by the interactions of dark matter with the crust of the earth. In this talk, I will present the upper bounds on the sensitivities of the experiments like SENSEI and XENON10/100 for both ultralight and heavy mediator. I will also briefly discuss the prospects of changing the height of the experiment above the ground or changing the depth of the experiment below the ground.

Summary

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