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High speed dark matter particles in our Solar vicinity

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Signals in dark matter direct detection experiments depend on the dark matter distribution in the vicinity of our Sun. If there is a population of high speed dark matter particles in our Solar neighborhood, it can significantly alter the interpretation of results from direct detection experiments. Cosmological simulations that sample potential Milky Way formation histories are powerful tools, which can be used to characterize the signatures of such high speed particles either originating from massive satellite galaxies or from outside of our Milky Way. I will discuss the impact of the high speed dark matter particles originating from the Large Magellanic Cloud in state-of-the-art cosmological simulations, and their implications for dark matter direct detection. I will also discuss whether the local dark matter velocity distribution contains any extragalactic high speed particles.

Keyword-1

dark matter

Keyword-2

cosmological simulations

Keyword-3

direct detection

Author: BOZORGNIA, Nassim (University of Alberta)

Presenter: BOZORGNIA, Nassim (University of Alberta)

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