

Determining Properties of WIMP Dark Matter with Direct Detection Experiments as Model Independently as Possible

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Abstract

Weakly Interacting Massive Particles (WIMPs) are one of the leading candidates for Dark Matter. Currently, the most promising method to detect different WIMP candidates is the direct detection of the recoil energy deposited by elastic scattering of ambient WIMPs on the target nuclei. For understanding the nature of WIMPs and identifying them among new particles produced at colliders, (hopefully in the near future), determinations of their mass and their couplings on nucleons from direct Dark Matter detection experiments are essential.

In this talk I will briefly review the direct Dark Matter detection from the theoretical point of view. Then I will present new model-independent data analysis methods for extracting the nature of WIMPs by using experimental data directly. These information will allow us not only to constrain the parameter space in different extensions of the Standard Model, but also to identify WIMPs among new particles produced at colliders (hopefully in the near future).

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Room: 1'404