ID de Contribution: **20** Type: **Contributed talk**

Surrogate Models for Direct Dark Matter Detection

jeudi 28 juin 2018 18:00 (20 minutes)

This talk will introduce the use of surrogate model techniques for direct detection of dark matter. We have developed a tool, RAPIDD, that replaces the exact calculation of the dark matter differential rate (which in general involves up to three nested integrals) with a much faster parametrization in terms of ordinary polynomials of the dark matter mass and couplings, obtained in an initial training phase. Based on the work presented in arXiv:1802.03174, we explore the need and benefit of doing direct detection calculations differently, increasing speed vastly and sacrificing very little in terms of accuracy. We will exhibit the general analysis that these methods enable us to do, requiring larger than usual dimensionality and including astrophysical uncertainties. RAPPID is particularly well suited to analysis that demands high-dimensional parameter spaces and a large number of evaluations.

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