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(I) Challenges for Direct Dark Matter Detection Searches

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The current and upcoming astroparticle physics program will help understand the nature of the universe with the possible discovery of the nature of dark matter. The efforts towards greater sensitivities to the small signal induced by the very rare event direct dark matter experiments aim to detect turn into a continuous fight against radioactive background. There are various methods to reduce or mitigate background sources. These mainly include the selection of very radio-pure materials to build the experiment and the detectors, detector technologies able to discriminate signal to background events and the choice of deep underground sites to locate the experiments. In this talk I will review the challenges for direct dark matter search experiment along with the current R&D efforts in detector technologies.

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