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## Background simulations for the BULLKID-DM experiment

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BULLKID-DM is an experiment designed to search for direct interactions of dark matter particles with mass around 1  $GeV/c^2$  or below. The experiment employs cubic silicon particle absorbers, each weighing 0.34 grams, sensed by cryogenic kinetic inductance detectors. A prototype detector comprising 60 absorbers has been successfully operated on the surface. Analysis of a single 0.34 g absorber, with surrounding absorbers serving as a veto, has demonstrated remarkable capabilities for background rejection, owing to its segmented structure.

This talk will introduce a Monte Carlo model developed to characterize background contributions from environmental gammas, neutrons, and muons. Understanding background contributions is crucial for the upcoming phase of the experiment, wherein a larger ~0.5 kg detector will be deployed deep underground at the Gran Sasso laboratory.

Author: VAZQUEZ-JAUREGUI, Eric Presenter: VAZQUEZ-JAUREGUI, Eric Session Classification: Workshop