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Active Inner Veto for Improved Dark Matter Search and Neutrino Detection Sensitivity

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Many projects are underway aiming to experimentally detect the elusive dark matter candidate particle, the WIMP. Furthermore, some of these technologies are leveraging their strengths to explore other rare event phenomena, such as Coherent Elastic Neutrino-Nucleus Scattering (CEvNS). Both avenues require aggressively combating sources of background events that are detrimental to the overall sensitivity of the experiment. For the SuperCDMS Experiment, two of the dominating sources of background are Compton scattered gammas and events due to radon contamination on the detectors and surrounding materials. This talk describes the design, fabrication, and performance of a novel active veto detector instrumented with phonon sensors that immediately surrounds the primary detector to substantially reduce these backgrounds.

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