

Physics Division Seminar

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Superconducting Detectors for Nuclear and Particle Physics

Host: José Repond

Monday, September 17, 2018 – 203, R150, 3:30 PM

The rapid progress of science and technology in the field of thin film superconductors, combined with advances in closed-cycle cryogenics have enabled a spread of interest in superconducting detectors in multiple areas of research that requires high sensitivity and low noise across the electromagnetic spectrum. Transition edge sensors have been instrumental in studies of Cosmic Microwave Background or Dark Matter searches and superconducting nanowire single-photon detectors are the technology of choice in the emerging fields of quantum communication and information sciences. In this talk, I will present the physics of operation of these devices, discuss the technological challenges of adapting these technologies to experiments in nuclear and neutrino physics and present recent progress of R&D efforts at Physics and Materials Science divisions at Argonne towards this goal.