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DAMIC and CONNIE: CCD detectors for low energy threshold dark matter and neutrino searches

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CCDs measure ionization energy produced from nuclear or electronic recoils, and can therefore be used as particle detectors with extremely low readout noise. This opens up a new experimental frontier in searching for coherent scattering of dark matter or neutrinos from silicon nuclei that produce ionization energies of only 10s of electron Volts. This talk will explain how CCDs are used for particle identification, and present recent results from two running CCD experiments. DAMIC (Dark Matter in CCDs) is a CCD experiment in SNOLab, optimal for searching for galactic halo WIMP dark matter with mass of around 1 GeV. CONNIE (Coherent Neutrino Nucleus Interaction Experiment) is a CCD experiment searching for the yet-unmeasured coherent scattering of neutrinos from a nuclear reactor at Angra in the Brazilian state of Rio de Janeiro. Issues common to both experiments, such as calibration of nuclear recoils at low energy, will be discussed. Plans for future larger scale experiments will be presented.

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Session Classification: Operational Experience on Current detectors