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Discrimination of events in superheated liquid[1] SIMON ARCHAMBAULT, University of Montreal, PICASSO COLLABORATION — PICASSO is a Dark Matter search experiment using superheated droplets of C_4F_{10} as the active detector material, suspended in an elastic polymer. If a WIMP (Weakly Interacting Massive Particle) hits a nucleus inside a droplet, the recoiling nucleus will deposit its energy in a heat spike, triggering a phase transition. The setup, installed at SNOLab, 2 km underground, consists of 32 cylindrical detectors of 4.5L. The acoustic signals emitted during a phase transition are recorded by nine piezo-electric transducers mounted on the detector walls and the waveforms are analysed offline. In this way, different types of events can be identified using different variables. One of these variables, which is proportional to the total energy of the acoustic signal, allows discrimination among neutron or WIMP-induced events, background alpha particle induced events and electronic noise; another discrimination variable is constructed from the Fast Fourier Transform of the signal and allows the discrimination of other classes of backgrounds.

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