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Film Vetoes for Alpha Background Rejection in Bolometer Detectors NICHOLAS DEPORZIO, Northeastern University, CARLO BUCCI, LUCIA CANONICA, MARIALAURA DIVACRI, Istituto Nazionale di Fisica Nucleare - CUORE, CUORE COLLABORATION, ABSURD TEAM — This study characterizes the effectiveness of encasing bolometer detectors in scintillating, metal ionization, and more exotic films to veto alpha radiation background. Bolometers are highly susceptible to alpha background and a successful veto should improve the statistical strength, speed, and signal-background ratio of bolometer particle searches. Plastic scintillator films are cooled to bolometer temperatures and bombarded with 1.4 MeV to 6.0 MeV alpha particles that are representative of detector conditions. Photomultipliers detect the keV range scintillation light and produce a veto signal. Also, layered films of a primary metal, dielectric, and secondary metal, such as gold-polyethylene-gold films, are cooled to milli-kelvin temperatures and biased with 0.1 V to 100 V to produce a current signal when incident alpha particles ionize conduction paths through the film. Veto signals are characterized by their affect on bolometer detection of 865 keV target signals. Similar methods are applied to more exotic films.

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