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Impurity Detector for the MuSun Experiment[1] NOEL LANE, FREDERICK GRAY, Regis University, MUSUN COLLABORATION — The MuSun experiment will measure the muon capture rate in deuterium. This process is sensitive to impurities within the deuterium at the part-per-billion level. When a muon is sent into a volume of deuterium it can be captured by an impurity atom, leading to the emission of an x-ray. In order to measure this reaction, a cylindrically symmetric array of ten plastic scintillating panels and five NaI crystals was designed. This apparatus may be placed around the deuterium volume during the experiment. It will observe the number of x-ray events in the NaI detectors that are not accompanied by an electron from the decay of the muon. A simulation was developed using the framework Geant4 to estimate the solid angle acceptance and energy resolution produced by the design.

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