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Development of an electrostatic dust detector for tungsten dust¹ D. STARKEY, Vassar College, K. HAMMOND, Harvard College, L. ROQUE-MORE, C.H. SKINNER, PPPL — Next-step fusion reactors, such as ITER, are expected to have large quantities of dust that will present hazards that have yet to be encountered in current fusion devices. To manage the amount of dust within the reactors a real-time dust detector must be implemented to ensure that dust does not reach hazardous levels. An electrostatic device that accomplishes this has already been tested on NSTX and Tore Supra [1,2]. We will present modifications of this device to improve its ruggedness to withstand the conditions that will be present in ITER. The detector consists of two tungsten wires wrapped around a macor cylinder that are biased at 100-300 V. Incident dust causes a measurable transient short circuit. Initial results have demonstrated the detection of tungsten particles. We will also present a potential method of electrostatic cleaning of residual dust from the detector.

- [1] C. H. Skinner et al., Rev. Sci. Instrum., 81, 10E102 (2010)
- [2] H. Roche et al., Phys. Scr., T145, (2011).

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