

**FABRICATION AND DESIGN OF THE LOST ALPHA FARADAY
CUP DETECTOR ARRAY FOR JET***

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The Faraday cup detector array for the Joint European Torus (JET) is designed to measure the loss of MeV fast ions from the plasma. Consisting of nine detectors spread over five poloidal and three radial locations, it will allow measurement of the poloidal distribution of lost ions, and the derivation of a radial scrape-off layer in some instances.

Each detector consists of four nickel foils 2.5 microns thick, separated by mica insulators of the same thickness. Multiple detectors are mounted on pylons which are then attached to a beam, which provides structural support as well as precise location. Signal cables from the detectors are routed through articulated conduits into plug assemblies.

Remote handling requirements, a high radiation operating environment, high temperatures and large electromagnetic forces due to halo currents pose severe design challenges. At the same time, a diagnostic capable of meeting these requirements can be seen as a prototype for an upgraded version on ITER. This paper describes the design of the detector array, highlights challenges and solutions, and discusses the relevance of this diagnostic to ITER.

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