Effects of MHD and Toroidal Field Ripple on Fast Ion Loss from JET*

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An array of Faraday cup detectors for measuring fast-ion loss at five poloidal and three radial locations is being commissioned on JET. Modest energy resolution is provided by measuring ion charge in stacked nickel foils; Low energy (~100 keV) beams are stopped in the front foil, and MeV ions can penetrate the front foil and be stopped in deeper foils, depending on their energy. The diagnostic is robust to high fluxes of neutrons, to be expected in burning plasmas, and is being developed as a fusion alpha-particle loss measurement technique. Ion-loss currents from only the front foils are observed during NBI heating and from both the front foils and deeper foils during ICRF heating. Significant bursts of currents are measured during sawtooth events and tornado modes. Observations of the Faraday cup currents during various experiments with varying amounts of toroidal-field ripple will be presented.

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