Abstract Submitted
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Study of the probe-induced plasma perturbation on magnetic field measurements using an insertable probe[1] M. LEEDS, J.B. TRIANA, J.C. TITUS, A.F. ALMAGRI, J.S. SARFF, Physics Department, University of Wisconsin-Madison — One of the most utilized diagnostics in magnetized plasma research is an insertable probe with pickup loops to measure the local magnetic field. When an insulated probe is inserted into the plasma, the plasma current is forced to flow around the probe body. The geometry of both the particle shield and the coil arrangement within the current-free probe volume affect the measurement's sensitivity to this perturbation. A probe has been constructed for use in 200 kA, $n_e \sim 10^{13}cm^{-3}$ MST plasmas with interchangeable particle shields (diameters of 1.6-2.5 cm) to investigate the influence of the probe's perturbation of measured fields. Magnetic pickup coils are arranged both centered and offset inside the probe body to measure all field components including the perturbation. The impact on both large-scale equilibrium and short wavelength magnetic fluctuations is studied. A simple lump-current wire model will be presented to interpret the data.

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