Abstract Submitted
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Probing plasma response models with n=2 measurements[1] J.M. HANSON, J. BIALEK, G.A. NAVRATIL, F. TURCO, Columbia U., J. KING, M. LANCTOT, C. PAZ-SOLDAN, E. STRAIT, GA — Frequency-dependent measurements of the magnetic plasma response to n=2 perturbations in DIII-D exhibit multiple resonances. In contrast with n=1 response measurements, which have been shown to exhibit a single frequency resonance in several tokamak devices, high-field side n=2 response measurements show a double resonance in the investigated frequency range of -100 to 100 Hz, in discharges near the n=2 no-wall β_N limit. The poloidal structure of the response varies with the perturbation frequency, becoming more peaked on the midplane at low frequency. The validation of response models remains an open issue for predicting the sensitivity of future devices to non-axisymmetric perturbations. In this case, the response amplitude is over-predicted by ideal MHD theory, evaluated using the MARS code. Incorporating kinetic modifications brings the predictions into closer agreement with measurements. However, aspects of the measurements, such as the multi-resonant behavior and vacuum field pattern, are not presently captured by the simulations.

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