

Abstract Submitted
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Measurement of plasma response to 3D fields at high- β in ASDEX Upgrade P. PIOVESAN, Consorzio RFX, V. IGOCHINE, IPP, A. KIRK, CCFE, M. MARASCHEK, IPP, L. MARRELLI, Consorzio RFX, W. SUTTROP, IPP, D. YADYKIN, Chalmers U., M. CAVEDON, IPP, I.G.J. CLASSEN, DIFFER, A. GUDE, M. REICH, E. VIEZZER, E. WOLFRUM, IPP, ASDEX UPGRADE TEAM — The plasma response to 3D fields is complex, possibly including both screening and amplification from MHD modes, and it must be well understood to optimize tokamak operation, e.g. to control ELMs. ASDEX Upgrade has unique and new capabilities to probe the plasma response, including two rows of 8 non-axisymmetric coils driven by AC power supplies and several high-resolution diagnostics. This recently allowed accurate measurements of the plasma response to low-n slowly rotating fields in high- β plasmas up to the no-wall limit. The importance of 3D field amplification from a marginally stable kink with respect to resonant field screening was tested by continuously varying the pitch of the applied 3D field during the discharge, as β increases, and by comparison with vacuum and plasma response calculations. It is found that the 3D field pitch determines the plasma response and affects ELM mitigation efficacy.

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