

Abstract Submitted
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Measurement of vertical stability metrics in KSTAR¹ SANG-HEE HAHN, Natl Fusion Res Inst, D. A. HUMPHREYS, General Atomics, D. MUELLER, Princeton Plasma Physics Laboratory, J.G. BAK, Natl Fusion Res Inst, N. W. EIDIETIS, General Atomics, H.-S. KIM, J.S. KO, Natl Fusion Res Inst, M. L. WALKER, General Atomics, KSTAR TEAM — The paper summarizes results of multi-year ITPA experiments regarding measurement of the vertical stabilization capability of KSTAR discharges, including most recent measurements at the highest achievable elongation ($\kappa \sim 2.0 - 2.1$). The measurements of the open-loop growth rate of VDE (γ_z) and the maximum controllable vertical displacement (ΔZ_{max}) are done by the release-and-catch method. The dynamics of the vertical movement of the plasma is verified by both relevant magnetic reconstructions and non-magnetic diagnostics. The measurements of γ_z and ΔZ_{max} were done for different plasma currents, β_p , internal inductances, elongations and different configurations of the vessel conductors that surround the plasma as the first wall. Effects of control design choice and diagnostics noise are discussed, and comparison with the axisymmetric plasma response model is given for partial accounting for the measured control capability.

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Sang-hee Hahn
Natl Fusion Res Inst

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