Abstract Submitted
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M3D-K Simulations of Beam-Driven Alfven Eigenmodes in ASDEX-U[1] GE WANG, GUOYONG FU, PPPL, Princeton, NJ, PHILIPP LAUBER, MIRJAM SCHNELLER, IPP, Garching, Germany — Core-localized Alfven eigenmodes are often observed in neutral beam-heated plasma in ASDEX-U tokamak. In this work, hybrid simulations with the global kinetic/MHD hybrid code M3D-K [1] have been carried out to investigate the linear stability and nonlinear dynamics of beam-driven Alfven eigenmodes using experimental parameters and profiles of an ASDEX-U discharge. The safety factor q profile is weakly reversed with minimum q value about qmin=3.0. The simulation results show that the n=3 mode transits from a reversed shear Alfven eigenmode (RSAE) to a core-localized toroidal Alfven eigenmode (TAE) as qmin drops from 3.0 to 2.79, consistent with results from the stability code NOVA as well as the experimental measurement. The M3D-K results are being compared with those of the linear gyrokinetic stability code LIGKA [2] for benchmark. The simulation results will also be compared with the measured mode frequency and mode structure.

[1] G.-Y.Fu et.al., Phys. Plasmas 13, 052517(2006)
[2] Ph.Lauber et.al., J.Comp.Phys. 226(2007):447

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Ge Wang
PPPL, Princeton, NJ

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