

Abstract Submitted
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Simulations of kink-like modes on NSTX¹ MARIO PODESTA, GE DONG, Princeton Plasma Phys Lab — Kink-like instabilities which are commonly observed in NSTX plasmas can lead to deterioration of plasma confinement. Understanding their stability properties and dynamics is therefore important to improve the machine performance. In this study, we performed simulations of kink-like instabilities in NSTX equilibrium for a variety of scenarios using the gyrokinetic toroidal code (GTC). In fluid limit with experimental plasma density and temperature profiles, a scan of the q profile shows that the non-resonant kink mode (NRK) can be stabilized if q_{min} is above 1.5. In simulations with kinetic thermal ions, the growth rate of NRK are slightly reduced, and the mode structure can be affected. In simulations with kinetic fast ions, the fishbone mode with finite real frequency and rotating mode structure can be destabilized.

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