

Abstract Submitted
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Nonlinear GAM and lower kinetic TAE generation by TAE¹ ZHIYONG QIU, Zhejiang University, LIU CHEN, Zhejiang University and UC Irvine, FULVIO ZONCA, ENEA, Italy — The decay of toroidal Alfvén eigenmode (TAE) [1] into a geodesic acoustic mode (GAM) [2] and a heavily damped lower kinetic TAE (LKTAE) [3], is investigated as possible mechanism for TAE saturation using nonlinear gyrokinetic theory. The equations describing the nonlinear interactions among TAE, GAM and LKTAE are derived analytically, and exhibit an interesting analogy to those describing convective cells generation by kinetic Alfvén waves [4]. It is shown that the decay is induced by the anti-Hermitian part of the LKTAE dispersion function due to its strong radiative damping, analogous to the scattering due to heavily Landau damped ion quasi-modes. Control parameters regulating the nonlinear decay are discussed. Possible diagnostics are also suggested for the experimental verification of the nonlinear process analyzed here.

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Zhiyong QIU
Zhejiang University

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