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Nonlocal theory for the excitation of GAMs in the edge region of tokamak plasmas[1] R.G. KLEVA, IREAP, Univeristy of Maryland, MD, USA, P.N. GUZDAR, IREAP, University of Maryland, College Park, MD, USA, N. CHAKRABARTI, SINP, Kolkata, India, J.J. RASMUSSEN, V. NAULIN, Association EURATOM - Risø DTU, RNLSE, Technical University of Denmark, Roskilde, Denmark, P.K. KAW, R. SINGH, IPR, Gandhinagar, India — A nonlocal theory of the excitation of geodesic acoustic modes by drift waves in an inhomogeneous plasma typical of the edge region of tokamaks, has been developed. The continuum GAM modes with coupling to the drift waves can give rise to discrete "global" unstable eigenmodes localized in the edge "pedestal" region of the plasma. These global eigenmodes have a two-space scale character. Inclusion of finite beta effects of the drift waves shows that the excitation of GAMs by the three-wave parametric coupling is stabilized by the Maxwell-Stress component of the nonlinear coupling. We will present comparison of our theoretical/numerical model with observations of GAMs spatial structure observed in various tokamak devices.

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P. N. Guzdar
IREAP, University of Maryland, MD, USA

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