AIP Physics of Plasmas

No Access
Submitted: 31 July 2015
Accepted: 27 October 2015
Published Online: 12 November 2015

Geodesic mode instability driven by electron and ion fluxes in tokamaks

Physics of Plasmas **22**, 114503 (2015); https://doi.org/10.1063/1.4935383

A. G. Elfimov[a], F. Camilo de Souza, *and* R. M. O. Galvão

View Affiliations
View Contributors

ABSTRACT

The effect of the parallel electron current and plasma flux on Geodesic Acoustic Modes (GAM) in a tokamak is analyzed by kinetic theory taking into the account the ion Landau damping and diamagnetic drifts. It is shown that the electron current and plasma flow, modeled by shifted Maxwell distributions of electrons and ions, may overcome the ion Landau damping generating the GAM instability when the parallel electron current velocity is larger than the effective parallel GAM phase velocity of sidebands, $Rq\omega$. The instability is driven by the electron current and the parallel ion flux cross term. Possible applications to tokamak experiments are discussed. The existence of the geodesic ion sound mode due to plasma flow is shown.

This work was supported by FAPESP (Research Foundation of the State of São Paulo), Contract No. 201150773-0, and by CNPq (National Council of Scientific and Technological Development) Contract Nos. 480733/2013-9 and 307511/2011-1, Brazil.

Password

Remember me

LOG IN

Forgot password?

INSTITUTIONAL ACCESS

Access through your institution

PURCHASE

Standard PPV for $35.00

ADD TO CART

Resources

AUTHOR

LIBRARIAN

PDF

General Information