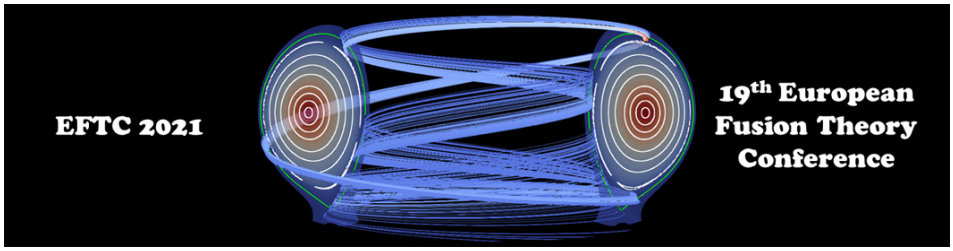

Contribution ID: **32** Type: **Poster**

Excitation of TAE modes by an electromagnetic antenna using the global gyrokinetic code ORB5

Thursday 14 October 2021 14:50 (1h 50m)

The excitation of toroidicity induced Alfven eigenmodes (TAEs) using an electromagnetic antenna acting on a confined toroidal plasma is studied. The antenna is described by an electrostatic potential resembling the target TAE mode structure along with its corresponding parallel electromagnetic potential computed from Ohm's law. Stable long-time linear simulations are achieved by integrating the antenna within the framework of a mixed representation and pullback scheme. By decomposing the plasma electromagnetic potential into symplectic and Hamiltonian parts and using Ohm's law, the destabilizing contribution of the potential gradient parallel to the magnetic field is canceled in the equations of motion. Besides evaluating frequency as well as growth/damping rates of excited modes compared to referenced TAEs, we study the interaction of antenna-driven modes with fast particles and indicate their margins of instability. Furthermore, we show preliminary results for nonlinear simulations in the presence of a TAE mode excited with the antenna.

Authors: Dr BIANCALANI, Alessandro (Max-Planck-Institut für Plasmaphysik, Garching, Germany); Dr MISHCHENKO, Alexey (Max-Planck-Institut für Plasmaphysik, Greifswald, Germany); VILLARD, Laurent (CRP-P-EPFL); SADR, Mohsen (EPFL - EPF Lausanne); MURUGAPPAN, Moahan (EPFL - EPF Lausanne); DONNEL, Peter Francois Tony (EPFL - EPF Lausanne); Dr HAYWARD-SCHNEIDER, Thomas (Max-Planck-Institut für Plasmaphysik, Garching, Germany)

Presenter: SADR, Mohsen (EPFL - EPF Lausanne)

Session Classification: POSTER SESSION

Track Classification: 9. Computational plasma physics