Autoresonant control of drift waves - DTU Orbit (10/01/2018)

**Autoresonant control of drift waves**
The control of nonlinear drift waves in a magnetized plasma column has been investigated. The studies are based on the Hasegawa–Mima model, which is solved on a disk domain with radial inhomogeneity of the plasma density. The system is forced by a rotating potential with varying frequency defined on the boundary. To excite and control the waves we apply the autoresonant effect, taking place when the amplitude of the forcing exceeds a threshold value and the waves are phase-locked with the forcing. We demonstrate that the autoresonant approach is applicable for excitation of a range of steady nonlinear waves of the lowest azimuthal mode numbers and for controlling their amplitudes and phases. We also demonstrate the excitation of zonal flows (m = 0 modes), which are controlled via the forced modes.