On the polarization of shear Alfvén and acoustic continuous spectra in toroidal plasmas

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Abstract:

In this work, the FALCON code is adopted for illustrating the features of shear Alfvén and sound continuous spectra in toroidal fusion plasmas. The FALCON codes employ the local Floquet analysis discussed in (Phys. Plasmas, vol. 26, issue 8, 2019, 082502) for computing global structures of continuous spectra in general toroidal geometry. As particular applications, reference equilibria for the divertor tokamak test and ASDEX Upgrade plasmas are considered. In particular, we illustrate the importance of mode polarization for recognizing the physical relevance of the various branches of the continuous spectra in the ideal magnetohydrodynamics limit. We also analyse the effect of plasma compression and the validity of the slow sound approximation