

Abstract Submitted
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The MHD spectral web: Connecting all instabilities of stationary plasmas HANS GOEDBLOED, FOM Institute DIFFER — Quite a lot is known about the spectra of MHD instabilities in plasmas with background flow, in particular through numerical studies. They exhibit bewildering distributions of the complex eigenvalues, with isolated global modes as well as local modes clustering towards complicated continuous spectra. This calls for the development of a general theory generating physically meaningful structures in the complex ω -plane connecting the eigenvalues. Whereas the simplicity of the energy principle of static equilibria no longer applies, proper consideration of the *two* quadratic forms of the potential energy and the averaged Doppler–Coriolis shift leads a new approach to the analysis of stationary plasmas, called the *spectral web*, that provides the desired structures. Thus, for the first time, the full complex spectrum of stationary plasmas is obtained together with a connecting structure. This permits to consider the enormous diversity of MHD instabilities of laboratory and astrophysical plasmas with arbitrary flow and rotation profiles from a single unifying view point. I will illustrate that with results obtained on these instabilities with the new spectral code ROC.

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