Abstract Submitted
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Constructing the spectral web of rotating plasmas HANS GOEDBLOED, FOM Institute DIFFER — Rotating plasmas are ubiquitous in nature. The theory of MHD stability of such plasmas, initiated a long time ago, has severely suffered from the wide spread misunderstanding that it necessarily involves non-self-adjoint operators. It has been shown (J.P. Goedbloed, PPCF 16, 074001, 2011; Goedbloed, Keppens and Poedts, Advanced Magnetohydrodynamics, Cambridge, 2010) that, on the contrary, spectral theory of moving plasmas can be constructed entirely on the basis of energy conservation and self-adjointness of the occurring operators. The spectral web is a further development along this line. It involves the construction of a network of curves in the complex omega-plane associated with the complex complementary energy, which is the energy needed to maintain harmonic time dependence in an open system. Vanishing of that energy, at the intersections of the mentioned curves, yields the eigenvalues of the closed system. This permits to consider the enormous diversity of MHD instabilities of rotating tokamaks, accretion disks about compact objects, and jets emitted from those objects, from a single view point. This will be illustrated with results obtained with a new spectral code (ROC).

Hans Goedbloed
FOM Institute DIFFER

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