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【221】 Towards a hybrid kinetic-MHD spectral code to study instabilities of tokamak plasmas

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Magnetohydrodynamics (MHD) is a powerful tool to assess the stability of laboratory plasmas. However, kinetic corrections to MHD can be crucial in the weakly collisional environment of a modern tokamak. The ultimate goal of this project is the implementation of a hybrid kinetic-MHD spectral code, which can capture kinetic effects while retaining the advantages and essential structure of the MHD problem. The equations to be numerically solved are presented in the case of a simplified test case. Following the van Kampen approach, the eigenvalue problem is expressed in standard linear form which is more convenient for numerical resolution than the nonlinear equations obtained using the traditional Landau approach.

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