

Global Sensitivity Analysis of Plasma Instabilities via Active Subspaces

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Abstract

The dynamics of plasmas are driven by potentially uncertain values of physical parameters. For this reason, the utilization of computational methods to quantify such uncertainty, including active subspace decompositions, represents an important tool to understand how certain physical phenomena depend upon fluctuations in the values of these parameters. In this vein, I'll discuss the construction and implementation of new computational methods to quantify the induced uncertainty within the (linear) instability rate generated by perturbations in a collisionless plasma near an unstable, spatially homogeneous equilibrium.