

Abstract Submitted
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New Stability Analysis Methods Developed for Tokamaks and Stellarators and Physics Insights Gain with These Methods¹ EGEMEN KOLEMEN, Princeton University — Two new methods to calculation of ideal and resistive stability of tokamaks and stellarators and physical insights are presented. Ideal and resistive stability of tokamaks are found using Riccati method. We show how the resistive stability and Deltaprime is a storage of the unstabilizing energy at the surface on a singular surface using Riccati formalism and how this insight can be used to stabilize plasma. For stellarators, we converted the equilibrium calculation into finding a fixed point of a map. Then the stability can be found from first order perturbation analysis around this equilibria. We show initial results of this method of stability analysis and try to make connections to dW analysis.

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