Title:
Further Development of Global Drift-Ballooning (GDB) Simulation for Divertor-Edge Studies

Authors:
Jake Willard[1], Lucas Dyke[1], Barrett Rogers[1]

Affiliations:
Department of Physics and Astronomy, Dartmouth College, Hanover, NH 03755, USA

Abstract:

The performance of tokamak fusion reactors has been shown to be largely determined by energy transport in the edge region, where the plasma comes in contact with the vessel walls. Instabilities in this region are driven by steep plasma profiles, which drive turbulence at scales significantly smaller than that of the core plasma. Successful attempts at modeling these processes include simulations based on drift-reduced Braginski equations, a primary goal being to understand and predict heat flux profiles into solid interfaces, e.g. the diverter target plates responsible for absorbing particle impacts that may otherwise damage other wall components. In this vein, we present here our efforts to extend the Global Drift-Ballooning (GDB) simulation code for the purpose of studying turbulent transport in realistic diverter edge geometry. Our ultimate aim is to characterize with greater confidence the heat flux into diverter target plates.