

Abstract Submitted  
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**Drift Trajectories In Tokamaks With Radial Electric Fields**

JOSHUA BURBY, Princeton University, JEAN-MARCEL RAX, Ecole Polytechnique — An interesting approach to achieving steady state tokamak operation is using radial electric fields to provide some, or all of the rotational transform. We have classified the trajectories of individual, collision free particles moving in fields relevant to this approach in terms of the exact invariants  $\mathcal{H}$ ,  $p_\phi$ , and the adiabatic invariant  $\mu$ . In addition, by employing classical averaging techniques we have derived a differential equation in two variables, the minor radius  $r$  and poloidal angle  $\theta$ , that determines the time dependence of such trajectories.

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