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Simulation of Hybrid Stellarator Divertor ALKESH PUNJABI, Hampton University, ALLEN BOOZER, columbia University — An efficient simulation method for stellarator divertors (A. H. Boozer and A. Punjabi, PoP **25**, 092520 (2018)) is used to study hybrid stellarator divertor with features of both the nonresonant and the resonant divertors and compare the results with our results for nonresonant stellarator divertor (A. Punjabi and A. H. Boozer, PoP **27**, 012503 (2020)). The plasma interaction with the fixed magnetic field of a divertor is diffusive but is far more efficiently studied by adding a small radial velocity to an integration of the magnetic field lines. Different magnetic configurations can be created by changing one of the shape parameters in the Hamiltonian for the trajectories of magnetic field lines in nonresonant stellarator divertor. The most novel result of this study of hybrid divertor for stellarator is that the diffusive field lines go into two families of magnetic cantori for all velocities with probability exponents of 2.1 for the primary family and 4.3 for the secondary family. In contrast to this, field lines go into two families of cantori only when the artificial radial velocities are larger than a certain value when there are no islands. The footprints on the wall are stellarator symmetric and have fixed locations on the wall. The hybrid divertor confines larger plasma volume, has higher average shear, larger footprints, lower average density of strike points, lower maximum density of strike points, and longer loss-times than the nonresonant stellarator divertor. The magnetic configuration is robust against small changes in the ι and large changes in the shape parameter.

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