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On the nature of transport in near-marginal DTEM turbulence: effect of a subdominant diffusive channel JOSE A. MIER, Universidad Carlos III, RAUL SANCHEZ, Oak Ridge National Laboratory, LUIS GARCIA, Universidad Carlos III de Madrid, DAVID NEWMAN, University of Alaska, BEN CARRERAS, BACV Solutions, Inc. — In this paper we characterize, using a novel Lagrangian method, the change in nature of radial transport in numerical simulations of near-critical dissipative-trapped-electron-mode turbulence, as the relative strength of an additional diffusive transport channel (subdominant to turbulence) is increased from zero. In its absence, radial transport exhibits the lack of spatial and temporal scales characteristic of self-organized-critical systems. This dynamical regime survives up to diffusivity values which, for the system investigated here, greatly exceeds the expected neoclassical value. Our results complete and extend previous works based instead on the use techniques imported from the study of cellular automata [1]. They shed further light on why some features of self-organized criticality seem to be observed in magnetically confined plasmas in spite of the presence of mechanisms which apparently violate the conditions needed for its establishment.
[1] J.A. Mier et al, Phys. Plasmas **13**, 102308 (2006)

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