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Structure-driven turbulence in "No man's Land" YUSUKE KOSUGA, PATRICK DIAMOND, WCI Center for Fusion Theory, NFRI — Structures are often observed in many physical systems. In tokamaks, for example, such structures are observed as density blobs and holes. Such density blobs and holes are generated at the tokamak edge, where strong gradient perturbations generate an outgoing blob and an incoming hole. Since density holes can propagate from the edge to the core, such structures may play an important role in understanding the phenomenology of the edge-core coupling region, so-called "No Man's Land." In this work, we discuss the dynamics of such structures in real space. In particular, we consider the dynamics of density blobs and holes in the Hasegawa-Wakatani system. Specific questions addressed here include: i) how these structures extract free energy and enhance transport? how different is the relaxation driven by such structures from that driven by linear drift waves? ii) how these structures interact with shear flows? In particular, how these structures interact with a shear layer, which can absorb structures resonantly? iii) how can we calculate the coupled evolution of structures and shear flows? Implications for edge-core coupling problem are discussed as well.

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