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**A Mechanism for $\underline{E}\times\underline{B}_0$ Structure Formation** PATRICK DIAMOND, WCI Center for Fusion Theory, N.F.R.I. and UCSD, OZGUR GURCAN, Ecole Polytechnique, T.S. HAHM, Seoul National University, GUILHEM DIF-PRADALIER, CEA Cadarache — A novel mechanism for $\underline{E} \times \underline{B}_0$ staircase formation is proposed. Staircases are quasi-regular patterns of strong, localized shear layers and profile corrugations interspersed with regions of avalanching. The critical question is how do such quasi-regular patterns self-consistently form. We propose a simple model based on a.) symmetry constraints on the form of the flux, b.) the existence of a fluctuation amplitude dependent time delay between the profile perturbation and the flux. The time delay leads to the development of quasi-periodic jams or clusters in the transport flux. These in turn nucleate profile corrugations and a shear layer staircase. The implication for avalanche structure will be discussed. The aim of this work is a self-consistent treatment of the spatio-temporal structure of transport and flows.

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