

Abstract Submitted
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Life at high Reynolds number PRASAD PERLEKAR, Department of Physics, and Department of Mathematics and Computer Science, Eindhoven University of Technology, Eindhoven, ROBERTO BENZI, Dip. di Fisica and INFN, Università “Tor Vergata,” Rome, DAVID NELSON, Lyman Laboratory of Physics, Harvard University, Cambridge, USA, FEDERICO TOSCHI, Department of Physics, and Department of Mathematics and Computer Science, Eindhoven University of Technology, The Netherlands — We study the statistical properties of population dynamics evolving in a realistic two-dimensional compressible turbulent velocity field: mimicking a surface flow. We show that the interplay between turbulent dynamics and population growth leads to quasi-localization and a remarkable reduction in the carrying capacity. The statistical properties of the population density are investigated and quantified via multifractal analysis. We investigate numerically the limit of negligibly small growth rates and delocalization of population ridges triggered by uniform advection. We also study the role of compressibility on the quasi-localization.

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