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**Influence of flow topology on Lagrangian statistics in forced 2-D turbulence** BENJAMIN KADOCH, M2P2/ECM/USD, DIEGO DEL-CASTILLO-NEGRETE, Oak Ridge National Laboratory, WOUTER BOS, LMFA/Ecole Centrale Lyon, KAI SCHNEIDER, M2P2/Université de Provence — Conditional Lagrangian statistics of forced two-dimensional turbulence in unbounded and bounded domains are studied by means of direct numerical simulation. The instantaneous flow domain is decomposed into either vorticity or strain dominated regions and a quiescent background region using the Okubo-Weiss criterion. The probability distribution function (PDF) of the residence time of the particles exhibits an exponential behavior in the background, while in the vorticity and strain dominated regions self-similar algebraic tails are found. For Lagrangian acceleration it is shown that both the vorticity and strain region are responsible for the heavy tails. Finally, the conditional PDFs of the curvature are found to be independent of the different flow domains yielding algebraic tails with slope close to -2, characteristic for an inverse chi-square distribution.

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