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# Invariant measures for passive scalars in the small noise inviscid limit

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## Abstract

For linear inviscid transport equations, we analyze a class of invariant measures obtained as limits of invariant measures for stochastic viscous drift diffusion problems. By means of a rigidity result, we are able to gather information about the support of such inviscid (gaussian) measures in terms of the spectral properties of the transport operator. In the particular cases of non-degenerate shear flows and relaxation enhancing flows, inviscid measures are unique and their covariance operator can be explicitly computed. Other two-dimensional flows, such as cellular flows, can be treated as well.

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