

# Measures of mixing quality in open flows with chaotic advection

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We address the evaluation of mixing efficiency in experiments of chaotic mixing inside an open-flow channel. Since the open flow continuously brings new fluid into the limited mixing region, it is difficult to define relevant mixing indices, as fluid particles experience typically very different stretching and mixing histories. The repeated stretching and folding of a spot of dye leads to a persistent pattern. We propose that the normalized standard deviation of this characteristic pattern is a good measure of the mixing quality of the flow. We discuss the link between this measure and mixing of continuously-injected dye, and investigate it using an idealized map.

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