Dynamics of spinodal decomposition in turbulent flows FED-
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India — When a binary mixture is cooled below its critical temperature it undergoes
a phase transition and the mixture separates into its individual components: this
phenomenon is widely known as spinodal decomposition. The dynamics proceeds
through different regimes all characterized by a coarsening of the domain size. We in-
vestigate numerically the dynamics of such a system when the mixture of immiscible
fluids is stirred at the large scale and thus turbulent. Under turbulent conditions we
find that the coarsening of the domains is arrested and a similarity with the physics
of dilute turbulent emulsions is possible. In particular we show that the typical
domain size can be estimated by means of the Kolmogorov-Hinze argument for the
stability of droplets in turbulence.

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