Non-Gaussian limit of a tracer motion in an incompressible flow

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We consider a massless tracer particle moving in a random, stationary, isotropic and divergence free velocity field. We study the limiting behavior of the tracer motion, as the velocity field is scaled by $\varepsilon\to 0$ and the time is accelerated appropriately. We identify a class of fields, for which the limit in law of the tracer motion is non-Gaussian but a Rosenblatt type of process.

Based on joint work with Tomasz Komorowski.