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Particle dynamics during the transition from isotropic to anisotropic turbulence CHUNG-MIN LEE, California State University Long Beach, ARMANN GYLFASON, Reykjavik University, FEDERICO TOSCHI, Eindhoven University of Technology — Turbulent fluctuations play an important role on the dynamics of particles in turbulence, enhancing their dispersion and mixing. In recent years the statistical properties of particles in several statistically stationary turbulent flows have been the subject of many numerical and experimental studies. In many natural and industrial environments, however, one deals with turbulence in a transient state. As a prototype system, we investigate the transition from an isotropic to an anisotropic flow, namely looking at the influence of a developing mean flow on the dynamics of particles. We simulate, via direct numerical simulation, stationary homogeneous and isotropic turbulence and then suddenly impose a mean shear or strain. This allows us to quantify the effects of the mean flow on particle dynamics in these transient periods. Preliminary results on single particle properties, such as velocities and accelerations will be reported.

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