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Angular dynamics of a small particle in turbulence BERNHARD MEHLIG, University of Gothenburg, FABIEN CANDELIER, Universite Aix Marseille, JONAS EINARSSON, University of Gothenburg — We compute the angular dynamics of a neutrally buoyant nearly spherical particle immersed in an unsteady fluid. We assume that the particle is small, that its translational slip velocity is negligible, and that unsteady and convective inertia are small perturbations. We derive an approximation for the torque on the particle that determines the first inertial corrections to Jeffery's equation. These corrections arise as a consequence of local vortex stretching, and can be substantial in turbulence where local vortex stretching is strong and closely linked to the irreversibility of turbulence.

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