

Abstract Submitted  
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**Turbulence modulation through the interface of a deformable drop** LUCA SCARBOLO, University of Udine, DAFNE MOLIN, University of Brescia, ALFREDO SOLDATI, University of Udine — The transport of momentum across the interface of a large deformable droplet immersed in a turbulent liquid is investigated using Direct Numerical Simulation of turbulence (pseudo-spectral method) coupled with the Diffuse Interface Model to track the droplet interface. We explored a wide range of Weber numbers (ratio between inertial forces and surface tension) always limiting the analysis to cases of non-breaking droplets where the droplet and the surrounding fluid have the same density and viscosity. We quantify turbulence modulation across the interface in terms of velocity fluctuations and turbulent kinetic energy, showing that turbulence is always weaker inside the droplet. We also determine how the turbulent kinetic energy budget terms are influenced by the surface tension and how the local vorticity is affected by the presence of the interface.

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