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Interscale energy transfer of liquid velocity fluctuations in a particle-laden plume.[1] CHRIS LAI, School of Civil Environmental Engineering, Georgia Institute of Technology, ANKUR BORDOLOI, Institute of Earth Sciences, University of Lausanne — We present an analysis of the interscale energy transfer inside a particle-laden plume. The experimental dataset analyzed was recently published (Bordoloi et al. 2020, J. Fluid Mech., 896:A19) in which stereoscopic particle image velocity (SPIV) was used to measure the interstitial fluid velocity fields at a plume centerplane. The single-phase Karman-Howarth-Monin (KHM) equation is adapted to multiphase turbulent flows by including the phase-indicator function. Implications of our analysis on turbulence modeling are discussed.

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