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Conditional statistics of inertial particle entrainment across a shearless turbulent interface SERGIY GERASHCHENKO, GARRETT GOOD, ZELLMAN WARHAFT, Cornell University — For the turbulent-non-turbulent shearless mixing layer described by Good et al. ("Effects of turbulence intensity and gravity on transport of inertial particles across a shearless turbulence interface." G. Good, S. Gerashchenko, Z. Warhaft, APS, DFD 2010), the large scales on the turbulent side showed a strong influence on the particle dynamics in the intermittent region of the mixing layer. Particle statistics conditioned on the turbulent bursts were measured and compared with the unconditioned statistics. The un-conditional statistics adequately describe the particle transport across the mixing layer. The conditional statistics show changes in particle concentration within the bursts as a function of penetration into the mixing layer and this is discussed in terms of the particle history. The effect of gravity on the conditioned particle dynamics, in particular on the time of arrival statistics and radial distribution function, is addressed. Sponsored by the U.S. NSF.

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