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Flow fluctuations and the local flowrule of granular suspensions ELIE WANDERSMAN, JOSHUA DIJKSMAN, WERNER DE GROOT, MARTIN VAN HECKE, Leiden University — We study particle fluctuations and the local flowrule in slowly driven sedimenting suspension flows. We employ a fully three-dimensional particle tracking method that allows us to track the spatial trajectories of all the particles across the system. This flow information is coupled to rheometric experiments, and applied to both Couette and a split-bottom geometry. We show that the non-affine part of the particle displacements evolves nonlinearly with the local strain-rate and further discuss our results in the context of recently proposed non-local rheology models for flowing disordered materials.

Elie Wandersman Leiden University

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