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**Implementation of Defiltering Techniques in Large-eddy Simulation of Particle-laden Turbulent Flows** BABAK SHOTORBAN, Center for Simulation of Advanced Rockets, University of Illinos at Urbana-Champaign, FARZAD MASHAYEK, Department of Mechanical & Industrial Engineering, University of Illinois at Chicago — In most studies of particle-laden turbulent flows in which the carrier phase is simulated by LES and particles are individually tracked in the Lagrangian framework, the effect of sub-filter scales on particles is neglected. However, the error resulted from such neglect can be significant if the sub-filter energy is relatively large and/or particle time constant is small. It has been recently shown that the prediction of turbuphoresis in the wall-bounded turbulence (Kuerten & Vreman, *Phys. Fluids* **17**, 017011, 2005) and particle dispersion in the homogeneous turbulence (Shotorban & Mashayek, *Phys. Fluids* **17**, 081701, 2005) can be largely improved if the sub-filter scales are reconstructed for particles via defiltering. In this work, the formulation for the use of defiltering techniques in the LES of particle-laden turbulent flows is reviewed and recent results obtained for the particle-laden homogeneous isotropic and shear flows are presented.

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