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**Particle tracking in LES flow fields: Lagrangian conditional statistics of filtering error** MARIO TESONE, University of Pisa, MARIA VITTORIA SALVETTI, University of Pisa, CRISTIAN MARCHIOLI, University of Udine, SERGIO CHIBBARO, Pierre et Marie Curie University - Paris 6, ALFREDO SOLDATI, University of Udine — The Lagrangian PDFs of the fluid velocity filtering error associated to Lagrangian particle tracking in filtered DNS flow fields are examined. To this aim, we perform a-priori tests in which the error purely due to filtering is singled out removing error accumulation effects, which would lead to progressive divergence between DNS and filtered DNS trajectories. PDFs are then obtained for the reference case of turbulent channel flow, conditioning the initial particle distribution within regions where either a sweep or an ejection is taking place. Preliminary results confirm the stochastic and non-Gaussian nature of filtering error in non-homogeneous flows. Compared to Eulerian PDFs, however, Lagrangian conditional PDFs exhibit differences which may offer useful insights for physical modelling. Specifically, for short times upon particle release, PDFs indicate a strong subgrid anisotropic effect of sweeps and ejections along the wall-normal direction. This feature underlines the link between turbulent coherent structures and strain, suggesting the possibility to model coherent structures with a direct link to velocity gradients. Asymptotically, the Lagrangian conditional PDFs recover the Eulerian behavior showing Stokes number effects limited to the PDF tails.

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