PDF modeling of two-phase flows : an introduction with recent developments for particle deposition

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Abstract – To propose accurate and efficient models for dispersed two-phase flows remains a challenging open issue. Due to the complex dependence on particle diameters and on fluid and particle instantaneous velocities, the closure problem for particle equations that appears in the Eulerian approach is difficult. In this seminar, we shall discuss a Lagrangian PDF model based on Langevin equation for polydispersed two-phase flows. Finally, recent developments for the case of particle deposition will be illustrated through numerical results and their comparison with experiments. In particular, we shall analyse a phenomenological model that introduces some of the effects on particles due to the presence of turbulent coherent structures in a thin layer close to the wall.