

**Mercredi 10 mars**  
**à 10h30**

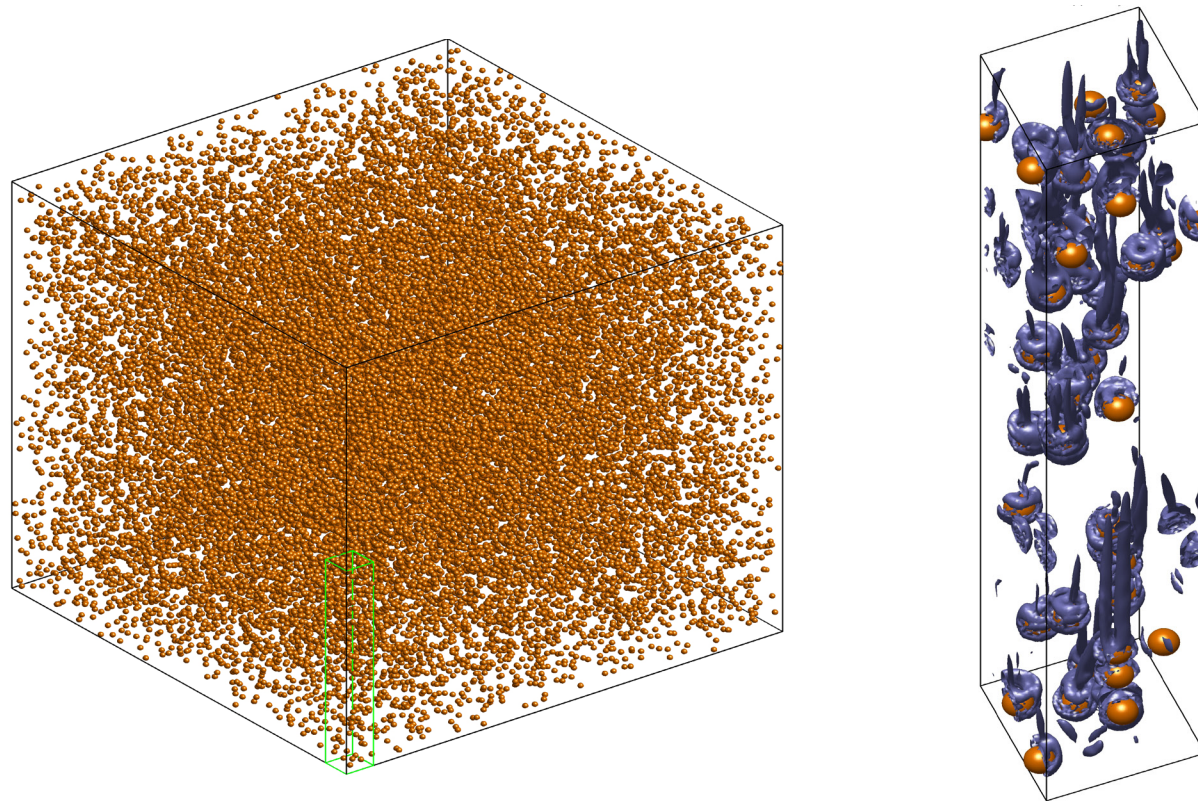
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# DNS of turbulent particulate flow

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gravitational settling of 27000 particles,  $Re_D = 300$

**ABSTRACT :** The interaction between turbulent flow and suspended solid particles is of interest in a considerable number of technical applications (e.g. civil and chemical engineering, combustion) as well as natural processes (meteorology, blood flow, ...). Reliable flow data is, however, still scarce due in part to measurement difficulties in these multiphase systems.

Traditionally, suspended particles have been described computationally (at best) by a point-particle approximation. However, when the size of the particles is comparable to or larger than the smallest flow scales, this ansatz loses its validity. The same is true when the Reynolds number of the flow around individual particles is not negligibly small. We have performed simulations for finite particle sizes (the computational particles are larger than the grid and their interface is resolved). For this purpose we resort to the immersed-boundary method which allows for an efficient representation of solid bodies in arbitrary motion across a fixed computational mesh.

In this talk we will present results for vertical and horizontal channel flow. We will close with an outlook on ongoing developments and additional flow configurations.

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