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**Microbubbles transfer and segregation mechanisms in turbulent upward/downward channel flow.** DAFNE MOLIN, ANDREA GIUSTI, ALFREDO SOLDATI, Dept. of Energetics and Flow Machinery, University of Udine, Udine (Italy) — The dispersion of microbubbles in a turbulent channel flow is studied by means of direct numerical simulation (DNS), both in upward and downward flow with a two-way coupling approach. Microbubbles dispersion shows a sharply distinct behavior in the two flow cases: in upward flow bubbles tend to accumulate and segregate near the walls, whereas in the downward flow they tend to segregate in the center of the channel. This different spatial distribution, which is due to the interplay between turbulent wall transfer mechanisms and the local fluid forces acting on bubbles (especially the lift force), is expected to have an influence on the flow field. In this work, we present detailed results from a systematic analysis on the effect of the different forces acting on bubbles and how the flow statistics are modified by the presence of bubbles.

Alfredo Soldati  
Dept. of Energetics and Flow Machinery,  
University of Udine, Udine (Italy)

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