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On the Basset-Boussinesq history force of a fluid sphere DOMINIQUE LEGENDRE, IMFT-Toulouse — We consider the Basset-Boussinesq (history) force experienced by a spherical drop. The kernel of the Basset-Boussinesq force has not been determined so far when internal circulation of the fluid occurs. We first characterize the slip at a fluid sphere interface. Under both steady and unsteady conditions, the corresponding slip length is remarkably uniform along the fluid sphere interface and is directly related to the viscosity ratio. Combining the analytical expression of the Basset-Boussinesq kernel obtained for a solid sphere with interface slip and the obtained description of the slip at the fluid-fluid interface, we were able to describe for the first time the Basset-Boussinesq history force acting on a spherical drop. This expression is valid whatever the viscosity ratio from bubbles to viscous drops.

Dominique Legendre
IMFT-Toulouse

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