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Probing the Nanohydrodynamics at Liquid-Solid Interfaces Using Thermal Motion CHRISTOPHE YBERT, LAURENT JOLY, LYDERIC BOCQUET, Universite Lyon I, France — We report on a new method to characterize nanohydrodynamic properties at the liquid-solid interface relying solely on the measurement of the thermal motion of confined colloids. This equilibrium measurement of surface propertiesequivalent in spirit to the passive microrheology technique used for bulk propertiesis able to achieve nanometric resolution on the slip length measurement. Exploring the "zero shear rate" limit, it rules out shear rate threshold to slip effects and extends the range over which slip lengths are shown to be flow independent. Avoiding the nucleation of gas pockets (nanobubbles) through external forcing, it validates the theoretical picture for intrinsic liquid-solid interfaces, reporting nanometric slip lengths (b 18 nm) only in nonwetting situations, opening the route to quantitative study on more complex surfaces with combined effects of nonwettability and roughness.

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