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Interaction of two oscillating bubbles rising in a thin gap
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We investigate experimentally different mechanisms of hydrodynamic interaction between two oscillating bubbles rising in a liquid at rest confined in a thin gap cell. In order to understand the relation between the motion of a single bubble and its wake as well as the hydrodynamic interaction between two oscillating bubbles, we characterize the kinematics of the bubbles interaction using high speed cameras and we measure the associated liquid velocity by High-Frequency PIV. The motion of the trailing bubble is modified while passing through the unstable wake of the leading bubble: depending on the relative size of the bubbles and their relative position, we can observe horizontal attraction to the center of the leading bubble's wake, vertical entrainment, ejection of the second bubble by a vortex of the wake or a sequential combination of the three mechanisms.