

Abstract Submitted
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Bubble dynamics in a variable gap Hele-Shaw cell SAUL PIEDRA, ROBERTO DOMIGUEZ, EDUARDO RAMOS, Universidad Nacional Autonoma de Mexico — We present observations of the dynamics of individual air bubbles ascending in a Hele-Shaw cell filled with water. Cells with gaps of 1 mm, 1.5 and 2.5 mm are used and the volume of the bubbles is such that we observe bubbles with apparent diameter from 2 mm to 7.3 mm. Given that we work with air and water in all experiments, the Morton number is constant and equal to 2.5×10^{-11} . The results are given in terms of the Eotvos, Archimedes and Reynolds numbers, and the trajectories and wakes of the bubbles are described as functions of the gap. In all cases we observe a linear relationship between the Reynolds and Archimedes numbers, but the proportionality constant varies with the gap. Also, although the wake is composed of alternating vortices similar to the von Karman vortex street, the size and location of the vortices vary with the gap. The analysis of some features of the observations and the description of the shape of the bubbles and dominant forces are made with a two dimensional numerical solution of the conservation equations using a front tracking strategy.

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