Numerical and experimental study of the coefficient of restitution for colliding bubbles ROBERTO ZENIT, Universidad Nacional Autonoma de Mexico, DOMINIQUE LEGENDRE, Institut de Mecanique des Fluides de Toulouse — We have studied the motion of bubbles colliding with solid walls both numerically and experimentally. The simulations were performed considering a VOF method of the JADIM code (Bonometti & Mahnaudet IJMF 2007) that permits to reproduce accurately motion bubbles for a large range of Eotvos and Morton numbers. To be able to compare with the numerical results, the experiments were carried out using silicon oils, for which the interface remains clean under ordinary laboratory conditions. By measuring the approach and rebound velocities, we calculated the coefficient of restitution of the collision, ϵ, which was found to scale as $-\log \epsilon \sim (Ca/St^*)^{1/2}$, as suggested by Zenit and Legendre (PoF, 2009) (where Ca is the capillary number and St^* is a modified Stokes number). Since the numerical results were validated (through direct comparisons with experiments), we conducted a vast parametric study of the coefficient of restitution, varying all the fluid properties in an independent manner. We will discuss these results and their implications in the study of solid/fluid particle collisions in general.

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