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**Toroidal Bubble Rings Interactions in Viscous Fluids** JING LOU, MING CHENG, Institute of High Performance Computing, T.T. LIM, National University of Singapore — We investigate rising toroidal bubbles in viscous fluids by using a 3-D Lattice Boltzmann model simulation, as well as experimental measurement. The bubble ring behavior is systematically characterized with effects of bubble vortex strength, buoyancy force, interface tension and viscosity dissipation. The bubble rise velocity, bubble spread/diffusion and instability is also modeled and compared with experimental observations. Further on, we modeled two co-centered rising toroidal bubbles interaction in a transient manner. In particular, the complex vortex interaction and its impact on bubble pair and flow wakes are discussed.

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