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**Behavior of a pair of bubbles rising side by side at high Reynolds number** TOSHIYUKI SANADA, AYAKA SATO, MINORI SHIROTA, MASAO WATANABE, Kyushu University — We study experimentally the motion and the wake of a pair of non-spherical bubbles rising side by side at high Reynolds number. The motions of bubbles were recorded by a high-speed video camera. The wakes of bubbles were visualized by using photochromic dye that is colored with UV light irradiation. We observed vortex separation from bubbles' rear surface at their collision, resulting in a great decrease in rising velocity of bubbles. Applying an existing model for spherical bubble-wall interaction by taking into account non-spherical effects on translational velocities and characteristics at the collision, we found that the revised model accurately describes the trajectory of a pair of bouncing-approaching bubbles. On the contrary, in the case of bubbles bouncing repeatedly, the effect of wake instability of a pair of bubbles on the motion of bubbles rather than the effect of bubble-bubble interaction dominates. We clarify that the vortex separation is strongly related with vertical velocity fluctuation.

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