

Abstract Submitted
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A Numerical Approach for Simulating Incompressible Two-Phase Flows Considering Surface Tension Effect¹ SANG HUN CHOI, MYUNG HWAN CHO, Seoul National University, HYOUNG GWON CHOI, Seoul National University of Technology, JUNG YUL YOO, Seoul National University — A novel level set method is proposed to simulate the incompressible two-phase flow considering the effect of surface tension. A mixed element is adopted, so that the continuity and Navier-Stokes equations are solved by using the Q2Q1 integrated finite element method, and the level set function is solved by using the Q1Q1 finite element method. For reinitialization of level set function, a direct approach method is employed, instead of solving hyperbolic type equation. In order to verify the accuracy and robustness of the code, the present method is applied to a few benchmark problems including the Rayleigh instability, bubble rising, and bubble breaking problems. It is confirmed that the present results are in good qualitative and quantitative agreements with the existing studies.

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