

CONVERGENCE TESTS FOR THE HEAT EQUATION AND THE ALLEN–CAHN EQUATION

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ABSTRACT

We perform the numerical convergence tests for the heat equation and the Allen–Cahn equation using a finite difference method. With very small temporal and spatial step sizes at the same time, we have the second-order convergence rate for the second-order scheme. However, in the case of the first-order in time and the second-order in space, the convergence rate depends on starting temporal and spatial step sizes. For more accurate tests we conduct the temporal and the spatial convergence tests separately.

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