

1154-65-836

Xiaoming Wang* (wangxm@sustech.edu.cn). *A second order in time energy stable variable step method for the Cahn-Hilliard equation.*

We propose a novel second-order in time variable step method for the Cahn-Hilliard equation. The scheme is a proper combination of variable BDF2, convex splitting, and viscous regularization at the discrete level. With the aid of a novel discrete Gronwall type inequality, we are able to show that the error is second-order in time and energy stable under a mild restriction on the ratio of the successive step-sizes. Such a result is new even for the linear case. (Received September 11, 2019)