



Memory Effect and Fast Spinodal Decomposition

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We consider the modification of the Cahn-Hilliard equation when a time delay process through a memory function is taken into account. We then study the process of spinodal decomposition in fast phase transitions associated with a conserved order parameter. The introduced memory effect plays an important role to obtain a finite group velocity. Then, we discuss the constraint for the parameters to satisfy causality. The memory effect is seen to affect the dynamics of phase transition at short times and have the effect of delaying, in a significant way, the process of rapid growth of the order parameter that follows a quench into the spinodal region.

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