SPINODAL INSTABILITIES IN ASYMMETRIC NUCLEAR MATTER

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Early growth of density fluctuations in the spinodal region of charge asymmetric nuclear matter is investigated in the basis of the stochastic mean field approach in the non-relativistic framework. The density correlation function provides a very useful information about the initial phase of the liquid-gas phase transformation of the system. In nuclear matter, it is possible to calculate the correlation function of the density fluctuations in nearly analytical form by employing the method of one-sided Fourier transform. The calculations involve a contour integration in complex frequency plane. The contour has symmetric collective poles on the imaginary frequency axis, and a cut on the entire real frequency axis. In order to provide a complete description of the correlation function the collective poles and the cut singularity, which correspond to the non-collective poles, are included into the calculations [1,2]. The resultant correlation function satifies the inital condition and leads to a higly non-trivial sum rule. This investigation allow us to obtain information about the dynamics of early phase of liquid-gas phase transformation of charge asymmetric nuclear matter.

This work is supported in part by US DOE Grant No. DE-FG05-89ER40530, and in part by TUBITAK Grant No. 114F151.

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