Isospin and density dependence of nuclear matter symmetry energy coefficients

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Abstract

Symmetry energy coefficients of explicitely isospin asymmetric nuclear matter at variable densities (from $.5\rho_0$ up to 2 ρ_0) are studied as generalized screening functions. An expression is derived for the (isospin) symmetry energy coefficient dependence on the neutron-proton asymmetry (b) [1]. An extended stability condition for asymmetric nuclear matter is proposed. We find the possibility of stable asymmetric nuclear matter even in some cases for which the symmetric nuclear matter limit is unstable. Skyrme-type forces are used in analytical expressions of the symmetry energy coefficients in the four channels of the particle hole interaction producing alternative behaviors at different ρ and b (the asymmetry coefficient).

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References

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