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**Phase diagrams of nuclear “pasta” investigated by QMD simulation** HIDETAKA SONODA, Dept. Phys., Univ. Tokyo; RIKEN, GENTARO WATANABE, NORIDITA; RIKEN, KATSUHIKO SATO, Dept.Phys., Univ. Tokyo; RESCEU, KENJI YASUOKA, Dept. Mech. Engi., Keio Univ., TOSHIKAZU EBISUZAKI, RIKEN — At subnuclear densities, such as in the inner crust of neutron stars and in the core of supernovae, it is pointed out that nuclei can adopt nonspherical shapes like rods or plates due to competition between the Coulomb energy and the nuclear surface energy. These nonspherical nuclei are referred to as nuclear “pasta.” We are studying these exotic phases by using Quantum Molecular Dynamics (QMD), which is a dynamical method and does not impose any assumptions on shapes of nuclei. Previous works investigated phase diagrams of nuclear matter at subnuclear densities by using a certain phenomenological QMD model Hamiltonian. But phase diagrams are influenced by various nuclear parameters such as surface energy, incompressibility, and properties of pure neutron matter. We noticed uncertainties of these nuclear parameters are essential and studied phase diagrams of nuclear pasta in the ranges of these uncertainties by QMD simulation.

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