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Quantum Nuclear Pasta Calculations with Twisted Angular Boundary Conditions BASTIAN SCHUETRUMPF, WITOLD NAZAREWICZ, NSCL / Michigan State University — Nuclear pasta, expected to be present in the inner crust of neutron stars and core collapse supernovae, can contain a wide spectrum of different exotic shapes such as nuclear rods and slabs. There are also more complicated, network-like structures, the triply periodic minimal surfaces, already known e.g. in biological systems. These shapes are studied with the Hartree-Fock method using modern Skyrme forces. Furthermore twisted angular boundary conditions are utilized to reduce finite size effects in the rectangular simulation boxes. It is shown, that this improves the accuracy of the calculations drastically and additionally more insights into the mechanism of forming minimal surfaces can be gained.

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