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Dynamics of Nuclear Pasta Phase Transitions ANDRE DA SILVA SCHNEIDER, CHARLES HOROWITZ, JOSEPH HUGHTO, DON BERRY, Indiana University — Knowing how matter organizes itself as its density increases from low densities to beyond nuclear saturation density has been a long standing problem in nuclear physics. It has been speculated that between these two limits matter undergoes a series of phase transitions that involve a range of exotic nuclear shapes. These shapes are collectively known as nuclear pasta. In this work we use large semi-classical molecular dynamics simulations to explore the dynamics of the phase transitions between different pasta shapes. We, then, use topological quantities known as Minkowski functionals to characterize the pasta shapes and study the equilibration of the system.

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