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Using Molecular Dynamics Codes to Quantify Neutron-Proton Equilibration

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Previous studies at the Cyclotron Institute at Texas A&M University have experimentally shown that neutron-proton equilibration in heavy-ion collisions evolves exponentially [1,2]. The two heaviest fragments originating from the dynamically deformed, excited projectile-like fragment evolve to become more similar as its angle of rotation increases. Results were compared to Constrained Molecular Dynamics and Anti-symmetrized Molecular Dynamics simulations varying the density dependences of the asymmetry energy term of the nuclear equation of state. The results indicate better agreement with a softer interaction.

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