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**Brandon Hoogstra\*** (bhoogstr@asu.edu). *Models of Quantum Dynamics for a Free Particle.*

The project proposes a time-dependent derivation of the Schrödinger equation which models the behavior of a free particle whose propagation is uninhibited by spatial barriers. Initially, a one-dimensional interpretation of a single particle with a potential energy function that depends solely upon time is considered. The results of the one-dimensional model are then generalized to produce a pragmatic three-dimensional model, as well as a theoretical  $n$ -dimensional model. Physical interpretations of free particles exhibiting time-dependent potential energy functions are provided through examples. The project proposes future research, including the incorporation of complex spacetime and applications of the models to tachyons. (Received September 24, 2017)