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Time-Dependent Dynamics of Massive Quarkonium Resonances in Nuclear and Quark-Gluon-Plasma Media NOOR SABRINA MAH HUSSIN, Drake University, ASMAA SHALABY, Benha University, ATHANASIOS PETRIDIS, Drake University — The time-dependent Schrödinger equation is used to study the formation of quarkonia and their propagation in Quark-Gluon Plasma (QGP) and nuclear media. The initial bound (ground) state is computed using imaginary-time propagation in a confining potential. The QGP is simulated with a confining potential of an extended asymptotic freedom region. The initial state propagates through this potential in real time. The nuclear medium is simulated with a periodic potential. In all cases the survival probability is calculated versus time for various potential parameters and relative momenta of the quarkonium with respect to the surrounding medium. In all calculations the staggered-leap frog method is used with special attention paid to the issue of stability. It is found that quarkonium decay is typically non-exponential. Fast moving states decay faster. There is a distinctive difference in the time-dependence of the survival probability between QGP and the nuclear medium. The effects of more realistic potentials are investigated.

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