

Abstract Submitted  
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**Time-resolved propagation of electromagnetically interacting fermions** ATHANASIOS PETRIDIS, ZACHARY KERTZMAN, KHINLAY WIN, Drake University — The propagation of electromagnetically interacting fermion-antifermion states representing mesons in free space and in medium is studied by means of the coupled time-dependent Dirac equation. This is solved numerically using the staggered leap-frog method on a spatial lattice. The stability of the equation is challenged by the presence of time-retarded potentials generated by the 4-vector, fermionic currents. The known effect of high-frequency oscillations that is inherent in the Dirac equation becomes less pronounced in the presence of mutual interactions. The time-development of the system is evaluated to address its dissociation. Self-interaction that amounts to emission and subsequent absorption of photons is also studied and the effects on wavefunction and mass renormalization are evaluated.

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