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The time-dependent, electromagnetic Aharonov-Bohm effect ZACHARY KERTZMAN, ATHANASIOS PETRIDIS, Drake University — Numerical, time-dependent solutions to the relativistic Dirac equation coupled with an external electromagnetic field are obtained using the staggered leap-frog method on a spatial lattice in two dimentions. The numerical stability of the method is evaluated and ensured by appropriate choices of the lattice constant and the time step. The action of the magnetic or electrostatic potentials in the region of zero electromagnetic fields is evaluated by means of the produced diffraction patterns. The time-dependent intereference as the spinor is guided around a quantum ring centered about an infinitely-long solenoid magnet is also studied.

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