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Worldline Method for Electromagnetic Casimir Energies JONATHAN MACKRORY, University of Oregon, Department of Physics, TANMOY BHATTACHARYA, Santa Fe Institute, DANIEL STECK, University of Oregon, Department of Physics — We present our work on the worldline method for calculating electromagnetic Casimir energies. The worldline method calculates the energy by generating an ensemble of closed space-time paths via a Monte-Carlo algorithm, and then summing up the contributions from the potential along each path. We calculate the Casimir energy due to dispersionless, dielectric bodies. We decompose the electromagnetic field into two polarizations, which behave as scalar fields. We will present our analytical and numerical work showing agreement for both Casimir-Polder and Casimir energies for atoms and planar dielectric bodies. We will also present results showing the numerical convergence of the algorithm.

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