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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 Brownian paths through space, 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 transverse electric (TE) and transverse magnetic (TM) polarizations, each of which behave as scalar fields. We will present our analytical and numerical work for both polarizations, and show agreement with prior results for both Casimir-Polder and Casimir energies for planar dielectric bodies. We will also present results showing the numerical convergence of the algorithm.

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