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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 generalization of the worldline method for calculating electromagnetic Casimir energies. Previously, this method has been restricted to calculations for a scalar field. Our work calculates the Casimir energy due to dispersionless, dielectric bodies with arbitrary geometries. 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 dielectric along each path. We will present our work on handling the convergence issues associated with the path integral, and some preliminary results comparing the method with other algorithms and known test cases.

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