

Abstract Submitted
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Application of basis function light front quantization to QED - the electron anomalous magnetic moment¹ HELI HONKANEN, JUN LI, PIETER MARIS, JAMES VARY, Iowa State University, STAN BRODSKY, SLAC National Accelerator Laboratory, Stanford University, AVAROTH HARINDRANATH, Saha Institute of Nuclear Physics, 1/AF, Bidhannagar, Kolkata, India, GUY DE TERAMOND, Universidad de Costa Rica, San Jose, Costa Rica — Working with a basis function expansion for the fields, we quantize the light-front QED Hamiltonian, adopt the light-front gauge, introduce convenient regulators and solve the test problem of the anomalous magnetic moment of the electron. The calculation is non-perturbative and is compared with the Schwinger result in the perturbative limit to assess the numerical precision. Our choice for the orthonormal and complete set of basis functions consists of two-dimensional harmonic oscillator basis for the transverse modes, that corresponds with eigensolutions of the soft-wall AdS/QCD model obtained from light-front holography, and a discretized momentum space basis for the longitudinal modes. Working within the lepton and lepton-photon Fock space sectors, we analyze the divergences in our approach and adopt a sector-dependent renormalization scheme.

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Heli Honkanen
Iowa State University

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