

Abstract Submitted
for the PSF15 Meeting of
The American Physical Society

Numerical split-shift potential method for relativistic quantum systems with radial symmetry¹ SAMANTHA NORRIS², Q.Z. LV, Q. SU, R. GROBE, Intense Laser Physics Theory Unit Physics, Illinois State University — We show how the spectrum of a radially symmetric Dirac-Hamiltonian can be computed rather accurately on a spatial grid based using a split-shift potential method. This method is sufficiently accurate such that the fine structure splittings of hydrogen-like relativistic ions with nuclear charge Z can be reproduced for a relatively small number of spatial radial grid points. We use this analytically known spectrum to examine the error scaling of this method. The method is then applied to examine the impact of a spatial confinement on the fine structure splittings and the bound states for hydrogen.

¹This work was supported by the NSF

²Please schedule this talk during the Friday or Saturday Session

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Date submitted: 07 Oct 2015

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