Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

A two-dimensional pseudospectral multi-configuration Hartree-Fock method for low-Z atoms in intense magnetic fields ANAND THIRUMALAI, KEVIN SCHMIDT, STEVEN DESCH, PATRICK YOUNG, Arizona State University — We present here the very first two-dimensional multi-configuration Hartree-Fock studies of low-Z atoms in intense magnetic fields. The first few low-lying states are calculated in this study. The method described herein is applicable to calculations of atomic structure in magnetic fields of arbitrary strength as it exploits the natural symmetries of the problem without assumptions of any basis functions for expressing the wave functions of the electrons, or the commonly employed adiabatic approximation. A pseudospectral formulation is employed which affords considerable computational speed-up and the results obtained here are significant improvements upon earlier pseudospectral single-configuration calculations and are consistent with findings elsewhere. We also present new data for some of the states of the low-Z atoms considered here.

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Date submitted: 15 Nov 2013 Electronic form version 1.4