Abstract Submitted
for the DAMOP12 Meeting of
The American Physical Society

Coulomb barrier and exchange interaction in dynamical two-electron systems[1] MAXWELL GREGOIRE, PAVEL LOUGOVSKI, HERMAN BATELAAN, University of Nebraska-Lincoln — Recent electron sources can produce pulses containing multiple electrons that are confined both laterally and longitudinally. Given that the highest reported degeneracy for continuous sources of free electrons is about 10^{-4}, it would be interesting to know the degeneracy for these pulsed sources. We previously studied one-dimensional two-electron degeneracy [1], and we now study three-dimensional two-electron degeneracy as a function of time. Our primary goal is to use this project as a necessary step to studying three-dimensional n-electron degeneracy. Our second goal is to develop a theory that predicts the outcome of Hasselbach's experiment demonstrating the Hanbury Brown-Twiss Effect [2] for free electrons.

[1] Lougovski P, and Batelaan H, Phys. Rev. A 84, 023417 (2011).
[2] Kiesel H, Renz A, and Hasselbach F, Nature. 418, 392-4 (2002).

[1]We gratefully acknowledge support from NSF.

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Date submitted: 30 Jan 2012 Electronic form version 1.4