Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Exchange of wavefunction in particle collisions[1] JULIO GEA-BANACLOCHE, HEMLIN RAG, Univ of Arkansas-Fayetteville — We consider the collision of two equal-mass particles in one dimension, interacting through a hard core repulsive potential, and represented by possibly different wavepackets. Classically it is known that the particles exchange their velocities. We show that quantum mechanically they exchange their wavefunctions as well, making it look even more like they just "passed through each other." We argue that this phenomenon—which is independent of the statistics obeyed by the particles—is a coherent quantum effect, and provide a simple explanation for it.

[1]Supported by NSF

Julio Gea-Banacloche
Univ of Arkansas-Fayetteville

Date submitted: 31 Jan 2014 Electronic form version 1.4