Abstract Submitted
for the DNP10 Meeting of
The American Physical Society

Spin Density Matrices for Nuclear Density Functionals with Parity Violation[1] BRUCE BARRETT, University of Arizona, BERTRAND GIRAUD, CEA Saclay — Within the context of the radial density functional [1], we apply the spin density matrix (SDM) used in atomic and molecular physics [2] to nuclear physics. The vector part of the SDM defines a "hedgehog" situation, which exists only if nuclear states contain some amount of parity violation. Thus, looking for the vector profile of the SDM could be used as a test for parity violation in nuclei. The difference between the scalar profile and the vector profile of the SDM will be illustrated by a toy model.

[1] B. G. Giraud, Phys. Rev. C 78, 014307 (2008).
[2] A. Goerling, Phys. Rev. A 47, 2783 (1993).

[1]This work was supported in part by NSF grants PHY-0555396 and PHY-0854912 and by the Institut de Physique Theorique, CEA Saclay.

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Date submitted: 02 Jul 2010 Electronic form version 1.4