

Abstract Submitted
for the HAW05 Meeting of
The American Physical Society

The Electric Dipole Form Factor of the Nucleon¹ CLAUDIO MAEKAWA, Fundacao Universidade do Rio Grande, Brazil, WILLIAM HOCKINGS, BIRA VAN KOLCK, University of Arizona — Various experiments have attempted to determine if the neutron has a non zero electric dipole moment (EDM). Because this quantity is relatively insensitive to the CKM phase, its observation is likely to represent an effect from other CP- violating quark interactions. The $\bar{\theta}$ term in QCD, in particular, induces T-odd contributions from the pion cloud to the nucleon EDM. The associated electric dipole form factor (EDFF) is not as readily accessible experimentally, but it is useful in that it gives an important electromagnetic contribution to nuclear Schiff moments, to which atomic effects are sometimes sensitive. We calculate the nucleon EDFF in the model- independent framework of chiral perturbation theory, up to subleading order. We also discuss implications for the deuteron EDM.

¹Research supported in part by a FIP/APS travel grant, by FAPERGS (Brazil) and by the US DOE.

Claudio Maekawa
Fundacao Universidade do Rio Grande, Brazil

Date submitted: 20 May 2005

Electronic form version 1.4