Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Dzyaloshinsky-Moriya Interaction in a Two-Dimensional Electron Gas With Rashba Spin-Orbit Coupling MOHAMMAD MAHDI VALIZADEH, SASHI SATPATHY, Department of Physics & Astronomy, University of Missouri, Columbia, MO 65211, USA — There is considerable interest in the Rashba spin-orbit coupling due to its potential spintronics application. We study the interaction between two localized magnetic moments in the presence of the Rashba spin-orbit coupling and obtain expressions for the interaction, which contains the RKKY, Dzyaloshinsky-Moriya, as well as a tensor part, viz., $E = J\vec{S}_1 \cdot \vec{S}_2 + \vec{D} \cdot \vec{S}_1 \times \vec{S}_2 + \vec{S}_1 \cdot \Pi \cdot \vec{S}_2$. Explicit expressions are obtained for these terms for the two-dimensional electron gas and their oscillatory behavior is studied as a function of distance between the two localized moments. Results are compared with the earlier works in the literature.

Mohammad Mahdi Valizadeh
Department of Physics & Astronomy,
University of Missouri, Columbia, MO 65211, USA

Date submitted: 13 Nov 2014 Electronic form version 1.4