

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Spin-Charge Coupling and Charge Order Phases in LuFe_2O_4

CHANG-JONG KANG, B.I. MIN, POSTECH — Possible charge order phases in mixed-valent multiferroic LuFe_2O_4 are studied based on the first principles density functional theory. We have considered two different charge order phases of LuFe_2O_4 suggested by Angst et al. [1] and de Groot et al. [2], and investigated their electronic and magnetic properties systematically to determine the correct charge order phase that is consistent with the experiment. The systematic comparison of physical properties between two charge order phases will be discussed, and the corresponding spin-charge coupling effect will be examined. We have found that the spin-charge coupling effect is an essential ingredient in LuFe_2O_4 .

[1] M. Angst et al., Phys. Rev. Lett. 101, 227601 (2008).

[2] de Groot et al., Phys. Rev. Lett. 108, 187601 (2012).

Chang-Jong Kang
POSTECH

Date submitted: 13 Nov 2013

Electronic form version 1.4