Abstract Submitted for the MAR12 Meeting of The American Physical Society

BaMn₂Sb₂: A New Semiconducting Ferromagnet¹ JIANNENG LI, S. STADLER, A. KARKI, Y. XIONG, R. JIN, Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA 70803 — We have grown high-quality single crystals of BaMn₂Sb₂, which possesses the ThCr₂Si₂ structure as determined by Xray powder diffraction technique. Magnetization measurements indicate that BaMn₂Fe₂ is ferromagnetic below $T_C = 580$ K. On the other hand, the temperature dependence of electrical resistivity shows semiconducting behavior, which can be described by thermally-activated resistivity formula with thermal activation energy about 0.25 eV. While the Hall coefficient has positive sign between 2 and 300 K, the Seebeck Coefficient undergoes sign change from positive at high temperatures to negative at low temperatures, reaching -260 μ V/K at 70 K. The implication will be discussed.

¹Supported by NSF No.DMR-1002622

Jianneng Li Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA 70803

Date submitted: 26 Nov 2011

Electronic form version 1.4