Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

New Kagomé Metal $Sc_3Mn_3Al_7Si_5$— Quantum Spin-Liquid Candidate?[1] HUA HE, WOJCIECH MIILLER, Stony Brook University, MEIGAN ARONSON, Stony Brook University; Brookhaven National Laboratory — While most of the reported Kagomé systems are semiconductors or insulators, in which the magnetic moments have a highly localized character, here we present a new intermetallic compound, $Sc_3Mn_3Al_7Si_5$, as a rare example of a Kagomé metal. The structure of the compound was established by single-crystal X-ray diffraction, and it crystallizes with a hexagonal structure ($Sc_3Ni_{11}Si_4$ type) with Mn atoms forming the Kagomé lattice. The *dc* magnetic susceptibility measurements find a Curie-Weiss moment of ~ 0.51 μ_B/Mn, however, no magnetic order is found for temperatures as low as 1.8 K. Electrical resistivity and heat capacity measurements show that this compound is definitively metallic, with an enhanced specific heat Sommerfeld coefficient below 10K, indicating strong electronic correlations. Intriguingly, these features have revealed $Sc_3Mn_3Al_7Si_5$ as a possible quantum spin liquid. The role of the geometrically frustrated structure and Mn-ligand hybridization in the magnetism of $Sc_3Mn_3Al_7Si_5$ is also discussed.

[1]We acknowledge the Office of Assistant Secretary of Defense for Research and Engineering for providing the NSSEFF funds that supported this research.

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Date submitted: 14 Nov 2013 Electronic form version 1.4