Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Two-band electronic metal and neighboring spin liquid (spin Bose-metal) on a zigzag strip with longer-ranged repulsion[1] HSIN-HUA LAI, OLEXEI I. MOTRUNICH, California Institute of Technology — We consider an electronic model for realizing the Spin Bose-metal (SBM) phase on a 2-leg triangular strip – a spin liquid phase found by D. N. Sheng *et al.* [Phys. Rev. B **79**, 205112 (2009)] in a spin-1/2 model with ring exchanges. Starting from a two-band "C2S2" metal, the SBM can be viewed as a "C1S2" Mott insulator with gapped overall conducting charge mode. We consider extended repulsive interactions motivated by the ab initio derivation of an electronic model for κ-ET spin liquid material [K. Nakamura *et al.*, J. Phys. Soc. Jpn. **78**, 083710(2009)]. Using weak coupling renormalization group analysis, we find that such interactions allow much wider C2S2 metallic phase than in the Hubbard model with on-site repulsion only. We identify a valid eight-fermion Umklapp term that is crucial for producing a Mott insulator and use Bosonization to study phases obtained out of the C2S2 metal upon increasing overall repulsion strength, finding that the SBM phase is a natural outcome for extended interactions.

[1]This research is supported by the A. P. Sloan Foundation and the National Science Foundation through grant DMR-0907145

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Date submitted: 19 Nov 2009 Electronic form version 1.4