

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Fractionalized Fermi liquids in a quantum dimer model JUN-HYUN LEE, Harvard University, STEVEN WHITE, University of California, Irvine, SUBIR SACHDEV, Harvard University — We consider a quantum dimer model with bosonic and fermionic dimers, proposed to describe the pseudogap phase of cuprates. ¹ By density matrix renormalization group calculations on a finite cylinder, we obtain the ground state density distribution of the fermionic dimers for a number of different total densities. From the Friedel oscillations at open boundaries, we deduce that the Fermi surface consists of small hole pockets near $(\pi/2, \pi/2)$, and this feature persists up to 1/8 doping. Our results support the existence of a “fractionalized Fermi liquid” in this model. We also discuss the form factors of the density modulations.

¹Matthias Punk, Andrea Allais, and Subir Sachdev, Proc. Natl. Acad. Sci. USA **112**, 9552 (2015)

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Date submitted: 06 Nov 2015

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