

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Néel and disordered phases of coupled Heisenberg chains¹

SAMUEL MOUKOURI, University of Michigan — We use the recently proposed two-step density-matrix renormalization group method to study the effects of frustration in Heisenberg models with $S=\frac{1}{2}$ to $S=4$ in a two-dimensional spatially anisotropic lattice. We find that the system is made of nearly disconnected chains at the maximally frustrated point, $J_d/J_\perp = 0.5$, i.e., the transverse spin-spin correlations decay exponentially. This leads to the following consequences: (i) all half-integer spins systems are gapless, behaving like a sliding Luttinger liquid; (ii) for integer spins, there is an intermediate disordered phase with a spin gap, with the width of the disordered state is roughly proportional to the 1D Haldane gap.

¹This work was supported by the NSF grant No DMR-0426775

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Date submitted: 02 Dec 2005

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