

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Influence of quantum phase transition and spin superconductivity in quantum two-dimensional frustrated Heisenberg antiferromagnets**  
LEONARDO DOS SANTOS LIMA, Centro Federal de Educaçao Tecnolgia de Minas Gerais — We use the Self Consistent Harmonic Approximation, the SU(2) and SU(3) Schwinger boson formalisms together with the Kubo formalism of the Linear Response Theory for the spin transport to study the influence of quantum phase transition (QTP) on spin transport in quantum two-dimensional frustrated Heisenberg antiferromagnets. The regular part of the spin conductivity,  $\sigma^{\text{reg}}(\omega)$ , is determined near and far of the critical points of the phase diagram for some two-dimensional frustrated antiferromagnets in the square, triangular and honeycomb lattices or where the system presents quantum phase transitions. We have verified an influence of QTP on the spin transport in all systems. We also have obtained a superconductor behavior for the spin transport (ideal spin current), in the DC limit in these n different types of frustrated spin systems.

Leonardo dos Santos Lima  
Centro Federal de Educaçao Tecnolgia de Minas Gerais

Date submitted: 05 Oct 2016

Electronic form version 1.4