

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Impurities in the hardcore Bose-Hubbard model and the xxz model on the triangular lattice**<sup>1</sup> SEBASTIAN EGGERT, Univ. of Kaiserslauter, Germany, XUEFENG ZHANG, YUCHUAN WEN — The ferromagnetic-antiferromagnetic xxz model is equivalent to the hardcore Bose-Hubbard model. On a triangular lattice frustration effects give rise to interesting physical behavior, including a realization of a supersolid phase. We now consider vacancies in this model using a combination of numerical Monte Carlo simulations and analytic calculations. The solid order and the superfluid density show characteristic changes locally around the impurity depending on the phase. In some cases a single impurity can affect the physical behavior of the entire system. The results show an interesting competition of the different order parameters and illustrate the nature of the excitations in the different phases.

<sup>1</sup>Financial support has been received from the DAAD and the DFG (SFB/TR49)

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Date submitted: 01 Dec 2009

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