

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Magnetic and transport properties of a one dimensional frustrated t-J model for vanadate nanotubes JOSE RIERA, Universidad Nacional de Rosario - CONICET, SEBASTIAN COSTAMAGNA, Instituto Fisica Rosario - CONICET — We propose a one-dimensional model consisting of a chain with a t-J Hamiltonian coupled to a Heisenberg chain in a frustrated geometry to describe the appearance of the ferromagnetic phase which has been experimentally observed in vanadate nanotubes. This model contains a mechanism of frustration suppressed by doping suggested by L. Krusin-Elbaum, *et al.* [Nature **431**, 672 (2004)]. We study, using numerical techniques in small clusters, the relation between magnetic order and transport properties in the proposed model, and we perform a detailed comparison of the properties of this model with those of the ferromagnetic Kondo lattice model (FKLM). For this comparison, a number of results for the latter model, obtained using the same numerical techniques, will be provided to complement those results already available in the literature. We conclude that it that does not appear to be a true ferromagnetic order in the proposed model, but rather an incommensurate ferrimagnetic one, and contrary to what happens in the FKLM, electronic transport is somewhat suppressed by this ferrimagnetic order.

Jose Riera
Universidad Nacional de Rosario - CONICET

Date submitted: 20 Nov 2006

Electronic form version 1.4