## Abstract Submitted for the MAR11 Meeting of The American Physical Society

Electronic, magnetic and structural properties of  $Cr_{1-x}V_xN$ CAMILO QUINTELA, Department of Applied Physics, University of Santiago de Compostela, Spain, FRANCISCO RIVADULLA, Departament of Physical Chemistry, University of Santiago de Compostela, Spain, JOSE RIVAS, Department of Applied Physics, University of Santiago de Compostela, Spain — We report a systematic study on the electronic, magnetic and structural properties of stoichiometric and hole-doped CrN and present the magnetic and electronic phase diagram for the  $Cr_{1-x}V_xN$  series. Stoichiometric CrN is a narrow gap, correlation-induced, semiconductor that orders antiferromagnetically below 286 K. The changes in the chemical bond associated to the magnetic order result in a non-activated behavior of the resistivity in the antiferromagnetic state, showing some similarities with other materials proposed to be itinerant-AF, like CaCrO<sub>3</sub>. Doping this state with holes drives the system towards itinerant electron behavior through a series of inhomogeneous magnetic/electronic states. Given the chemical and structural simplicity of this system, it could provide an interesting place to study the evolution from an antiferromagnet with a non-thermally activated charge transport to a paramagnetic metal in a non-oxide material.

> Camilo Quintela Department of Applied Physics, University of Santiago de Compostela, Spain

Date submitted: 18 Nov 2010

Electronic form version 1.4