

Critical Properties at the Field-Induced BEC in $\text{NiCl}_2\text{-SC}(\text{NH}_2)_2$

A. Paduan-Filho,¹ K.A. Al-Hassanieh,² P. Sengupta,^{2,3} and M. Jaime³

¹ Instituto de Física, Universidade de Sao Paulo, Brazil

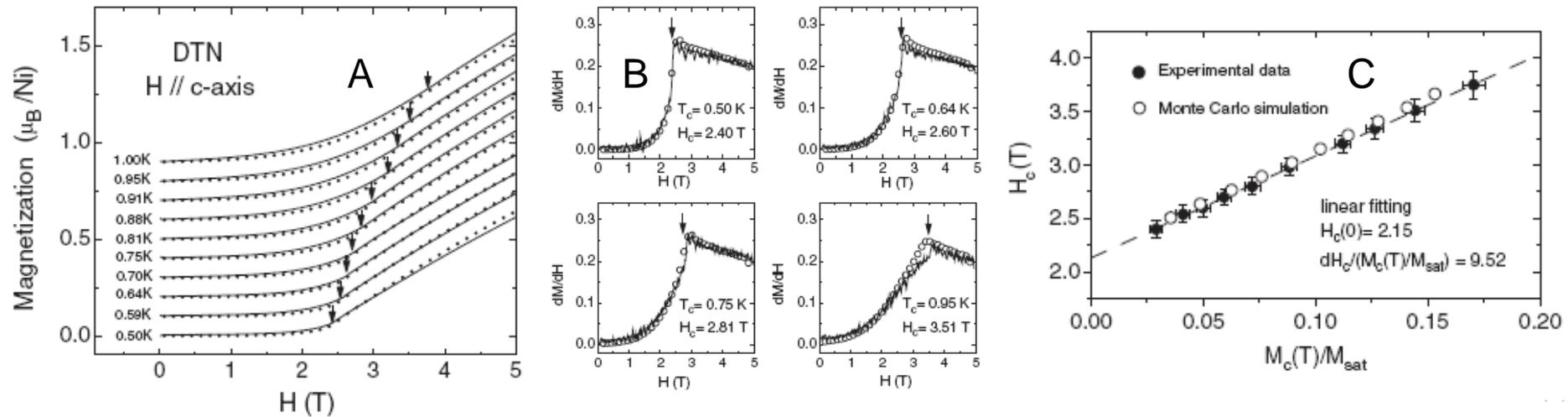
² Theoretical Division, Los Alamos national Laboratory

³ National High Magnetic Field Laboratory, Los Alamos National Laboratory

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$$\mathcal{H} = \sum_{j\nu} J_\nu \mathbf{S}_j \cdot \mathbf{S}_{j+\nu} + \sum_j [D(S_j^z)^2 - g\mu_B H S_j^z] \quad (1)$$

$$H_c(T) - H_c(0) = [2v_0/g\mu_B] M_c(T)/M_{\text{sat}} \quad (2)$$



- Magnetization vs magnetic field measured at constant temperature (Fig A)
- dM/dH computed to identify H_c (Fig B)
- Solid lines in Figs. A and B are Quantum Monte Carlo results using $J_c = 2.2\text{K}$, $J_{a,b} = 0.18\text{K}$, $D = 8.9\text{K}$ and $g = 2.26$ in Hamiltonian

- (H_c, M_c) phase diagram obtained from experimental data (solid symbol) and Quantum Monte Carlo (open symbols) in Fig C, confirm preservation of $U(1)$ symmetry and provide strong evidence in support of BEC of magnons [eq. (2)].