

# Critical Exponents of Dilute Ferromagnetic Insulator $\text{Ga}_{1-x}\text{Mn}_x\text{N}$

S. Stefanowicz,<sup>1</sup> G. Kunert,<sup>2</sup> W. Stefanowicz,<sup>1</sup> D. Hommel,<sup>2</sup> T. Dietl,<sup>1,3,4</sup>  
and M. Sawicki<sup>1</sup>

<sup>1</sup>*Institute of Physics, Polish Academy of Sciences, Warsaw, Poland*

<sup>2</sup>*Institute of Solid State Physics, University of Bremen, Germany*

<sup>3</sup>*Institute of Theoretical Physics, University of Warsaw, Poland*

<sup>4</sup>*WPI-AIMR, Tohoku University, Sendai, Japan*

Insulating ferromagnet (Ga,Mn)N brings a new paradigm into the semiconductor family. It is therefore important to comprehensively characterize its magnetic ground state. To this end we analyze the critical exponents  $\beta$  and  $\gamma$  for MBE grown layers with  $0.04 < x < 0.10$  [1] and superlattice structures  $\text{Ga}_{1-x}\text{Mn}_x\text{N}/\text{GaN:Mg}$ . In all samples the critical behavior shows strong deviations from the magnetically clean case ( $x = 1$ ): an apparent breakdown of the Harris criterion, a nonmonotonic crossover in the values of the  $\gamma_{\text{eff}}$  between the high temperature and critical regimes, and a smearing of the critical region by macroscopic inhomogeneities in the spin distribution.

## References:

[1] S. Stefanowicz *et al.*, Phys. Rev. B **88**, 081201(R) (2013) and references therein

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