

Abstract Submitted
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Critical behavior study of antiferromagnetism in isostructural $\text{La}_2\text{CuO}_{4+\delta}$ and $\text{La}_2\text{NiO}_{4+\delta}$ BENJAMIN WHITE, JOHN NEUMEIER, Montana State University, A. ERB, Walther Meissner Institute — Neutron diffraction [1] and nuclear quadrupole resonance [2] experiments coupled with theory calculations provide substantial evidence to support the widely-accepted belief that the two-dimensional Heisenberg model describes the antiferromagnetic interactions in La_2CuO_4 ($S = 1/2$) and La_2NiO_4 ($S = 1$). The heat capacity critical exponent α , which could provide further evidence, has never been studied in these two compounds because of the weak nature of the anomalies at T_N . [3] We will present heat capacity and high-resolution thermal expansion measurements of La_2CuO_4 and La_2NiO_4 single crystals, grown by the floating-zone method, and an analysis of α within the context of predicted values for a variety of universality classes. This material is based upon work supported by the NSF (DMR-0504769) and US DOE Office of Basic Energy Sciences (DE-FG-06ER46269) [1] Y. Endoh et al., PRB 37, 7443 (1988); G. Aeppli and D.J. Buttrey, PRL 61, 203 (1988). [2] P. Carretta, A. Rigamonti, and R. Sala, PRB 55, 3734 (1997). [3] T. Kyomen et al., PRB 60, 14841 (1999); K. Sun et al., PRB 43, 239 (1991).

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