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Effects of Zn doping on the A-Site antiferromagnet spinel $CuRh_2O_4$[1] ALEXANDER ZAKJEVSKII, DALMAU REIG-I-PLESSIS, University of Illinois, Urbana, IL, ALEXANDER THALER, ASHFIA HUQ, Oak Ridge National Laboratory, Oak Ridge, TN, GREGORY MACDOUGALL, University of Illinois, Urbana, IL — A major recent focus of the correlated electron community has been the investigation of 4d and 5d transition metal oxides, which are predicted to have novel phases arising from relativistic spin-orbit coupling. We have recently synthesized and characterized several compounds of the doped spinel series $Cu_{1-x}Zn_xRh_2O_4$. The parent compound is a normal spinel which undergoes a cubic-tetragonal structural phase transition at T$\sim$850K, and further undergoes a suspected antiferromagnetic transition at T_N=22K. We have performed powder x-ray and neutron diffraction, and bulk magnetization measurements on members of the Zn-doping series. Magnetization measurements clearly indicate a monotonic suppression of the Néel temperature with increasing Zn content, to a quantum critical point at x$\cong$0.42. X-ray results indicate a change in structure occurring near the same doping. We will present these data and discuss the results within the context of exotic predictions in the literature. Lastly, we will discuss our recent neutron powder diffraction measurements and insights gleaned about the local spin state.

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