Magnetic susceptibility analysis on Zn-doping in the high $T_c$ superconductor $\text{YBa}_2\text{Cu}_3\text{O}_7$\textsuperscript{1} ZACHARY C.M. WINTER, MICHAEL G. SMITH, ALWYN REBELLO, JOHN J. NEUMEIER, Montana State University — Localized magnetic moments are known to destroy superconductivity in conventional superconductors. In the case of $\text{YBa}_2\text{Cu}_3\text{O}_7$ (YBCO), the nonmagnetic ion Zn has a very strong impact on suppressing the superconducting transition temperature ($T_c$). YBCO loses all superconductivity when only 10% of the Cu is substituted with Zn.\textsuperscript{2} In this project, we have investigated the magnetic susceptibility for a number of Zn doping levels in samples with the nominal composition $\text{YBa}_2(\text{Cu}_{1-x}\text{Zn}_x)_3\text{O}_7$. We observe the development of Curie-Weiss paramagnetism for some Zn compositions, and will address whether the associated paramagnetic moments might cause magnetic pair-breaking.

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