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Strong Electronic Correlations in YMn_2Ge_2 DANIEL MCNALLY, JACK SIMONSON, GREG SMITH, MEIGAN ARONSON, Department of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794, USA — Exotic phases, like superconductivity, often emerge near electron delocalization transitions in strongly interacting systems. Magnetization, heat capacity and resistivity measurements were performed on single crystals of the antiferromagnetic metal YMn_2Ge_2, which is isostructural to the $ThCr_2Si_2$-type iron pnictides. Above the antiferromagnetic ordering temperature T_N=425 K, the magnetic susceptibility displays Curie-Weiss like behaviour with a fluctuating moment μ = 3.3 μ_B/Mn atom, larger than the ordered moment of 2.2 μ_B/Mn atom. Heat capacity measurements yield a Sommerfeld coefficient $\gamma = \frac{C}{T}$ = 8.5 mJ/mol Mn K^2, nearly three times larger than γ_{Ru} = 3.3 mJ/mol Mn K^2 for its non-magnetic isostructual analog YRu_2Ge_2, indicating strong electronic correlations in YMn_2Ge_2. The quasiparticle mass enhancement $\frac{m*}{m_{Ru}} = \frac{\gamma}{\gamma_{Ru}}$ = 2.6 is similar to the value observed in the 122-type iron pinctides. Fermi-liquid behaviour of the resistivity $\rho = \rho_0 + AT^2$ is observed over a very broad range of temperatures between 0.5 K and 300 K, with the resistivity at low temperature ρ(0.5 K) = 8 $\mu\Omega$ cm indicating high sample quality

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