

Abstract Submitted  
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**Intermediate-Valence Behavior in the Transition-Metal Oxide  $\text{CaCu}_3\text{Ru}_4\text{O}_{12}$**  WOLFGANG KRAETSCHMER, NORBERT BUETTGEN, ALOIS LOIDL, Center for Electronic Correlations and Magnetism, University of Augsburg, Germany, ERNST-WILHELM SCHEIDT, CPM, University of Augsburg, Germany — A detailed study of the electronic properties of strongly correlated CCRO will be presented. Along with transport,  $\chi(T)$  and specific heat, we focus on NMR/NQR. CCRO is a metallic system with perovskite structure showing non-Fermi-liquid behavior below 2 K which is inferred from  $C_p/T \propto -\ln(T)$  and a deviation of  $1/T_1(T)$  from the Korringa law at the copper site [PRB **78**, 165126 (2008)]. On closer inspection, a volume change could be detected by neutron diffraction which comes along with a corresponding anomaly in the specific heat around 150 K. Furthermore, the  $^{99}\text{Ru}$  Knight shift shows a cross-over between paramagnetic behavior of localized moments at high  $T$  and itinerant band states at low  $T$ , respectively. Complementary density-functional calculations (LDA+DFT) relate these phenomena to the ruthenium  $d$ -electron number. We conclude that dynamic charge fluctuations originating from the strong electronic correlations are present in CCRO and give rise to the intermediate valence of the ruthenium ions [PRB **80**, 121101(R) (2009)].

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