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Weak hybridization and isolated localized magnetic moments in the compounds CeT_2Cd_{20} (T = Ni, Pd)[1] BENJAMIN WHITE, DUYGU YAZICI, Department of Physics, University of California, San Diego, PEI-CHUN HO, Department of Physics, California State University, Fresno, NORAVEE KANCHANAVATEE, NAVEEN POUSE, AARON FRIEDMAN, M. BRIAN MAPLE, Department of Physics, University of California, San Diego — Large Ce-Ce distances of 6.7-6.8 Å and weak hybridization between Ce $4f$ and itinerant electron states act to promote stable localized magnetic moments in the compounds CeT_2Cd_{20} (T = Ni, Pd), but also conspire to severely limit the strength of the Ruderman-Kittel-Kasuya-Yosida (RKKY) magnetic exchange interaction that couples them. As a consequence, measurements of electrical resistivity, performed on single-crystalline samples of these new Cd-based compounds down to 0.138 K, were unable to resolve any evidence for magnetic order. In this presentation, we will compare measurements of the physical properties of CeT_2Cd_{20} (T = Ni, Pd) under ambient and applied pressures with the reported properties of the isostructural compounds CeT_2X_{20} (T = transition metal; X = Al, Zn). We will use these comparisons to discuss the interplay of unit cell volume, hybridization, and the RKKY interaction and its role in establishing the ground states of the Ce-based "1-2-20" compounds.

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