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ESR of Gd^{3+} in the Intermediate Valence $YbAl_3$ and its Reference Compound $LuAl_3$ R.R. URBANO, M.A. PIRES, E.M. BITTAR, C. RETTORI, P.G. PAGLIUSO, IFGW-Unicamp, Campinas-SP 13083-970, Brazil, B. MAGILL, National High Magnetic Field Laboratory and Department of Physics, Florida State University, Tallahassee, FL 32306, U.S.A., S. OSEROFF, San Diego State University, San Diego, CA 92182, U.S.A. — Electron Spin Resonance (ESR) experiments were performed on Gd^{3+} doped $YbAl_3$ intermediate-valence (IV) compound and its reference compound $LuAl_3$. A Korringa rate, $d(\Delta H)/dT \simeq 14$ Oe/K, and a negative g shift, $\Delta g \simeq 0.01$, are obtained for $Yb_{0.996}Gd_{0.004}Al_3$. These data are compared to a smaller positive g shift and Korringa rate found for the reference Lu-based compound. Our results suggest that the density of states at the Fermi level is built up of multiple bands for both materials. Effects associated with the low temperature energy scale ($T \simeq 10$ K) of $YbAl_3$ are taken into account to interpret our ESR results. Magnetic susceptibility and specific heat measurements are also presented.

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