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NQR and T1 studies of the high pressure phase in YbInCu4 BEN-LI YOUNG, N. J. CURRO, Condensed Matter and Thermal Physics, Los Alamos National Laboratory, V. A. SIDOROV, Vereshchagin Institute for High Pressure Physics, Russian Academy of Sciences, 142190 Troitsk, Moscow region, Russia, J. D. THOMPSON, J. L. SARRAO, Condensed Matter and Thermal Physics, Los Alamos National Laboratory — The pressure and temperature phase diagram of $YbInCu_4$ has been investigated by nuclear quadrupolar resonance (NQR) and spin-lattice relaxation rate ($1/T_1$) experiments. The pressure dependence of the ^{63}Cu NQR frequency suggests that the 1st-order valence transition temperature, T_v, does not vanish at the critical pressure $P_c = 23.7$ kbar and thus there is no quantum critical point ($T_v = 0$) in $YbInCu_4$. This is consistent with the $1/T_1$ data, which show no evidence for non-Fermi-liquid behavior near P_c. For pressures $P \geq P_c$, $1/T_1$ increases sharply near 2.4 K, which suggests the presence of ferromagnetic (FM) ordering associated with critical fluctuations, as suggested by the ac susceptibility. We analyzed the $1/T_1$, resistivity, and the pressure-enhanced susceptibility data in the mixed- valent state of $YbInCu_4$ and found no evidence to indicate that the pressured-induced FM phase can be described by the Stoner theory for itinerant ferromagnetism. This may suggest that the pressure-induced FM order is due to pressure-stabilized Yb^{3+} local moments rather than the itinerant electrons from the mixed-valent state. We also examined the possibility of the FM order induced by an external field near P_c, but found no evidence down to 1.5 K.

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