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Influence of charge carrier doping on the T^*-scale in $\mathbf{YbRh_2Si_2}$[1] PHILIPP GEGENWART, H.S. JEEVAN, Y. TOKIWA, M. SCHUBERT, M. MCHALWAT, E. BLUMENROETHER, I. Physik. Institut, Goerg-August University Goettingen — $YbRh_2Si_2$ is a prototype heavy-fermion metal which displays a magnetic field-induced antiferromagnetic (AF) quantum critical point (QCP). It has attracted much attention due to an additional low-energy scale $T^\star(B)$ merging at the QCP, whose origin is controversially discussed. Here, we report measurements of the electrical resistivity $\rho(T, B)$ on different single crystalline samples of charge-carrier doped $Yb(Rh_{1-x}T_x)_2Si_2$ (T=Fe, Ni) at temperatures down to 15 mK and in magnetic fields up to 7 T. The partial substitution of Rh by either Fe or Ni introduces holes or electrons, respectively. The evolution of the single-ion Kondo scale is similar as for isoelectronic Co substitution and in accordance with the chemical pressure effect. However, while chemical pressure has little influence on $T^\star(B)$, we observe a drastic reduction or increase of $B^\star(T = 0)$ by Fe- or Ni-doping, respectively. Most interestingly, $B^\star(T = 0)$ is always pinned at the field-induced AF QCP, in contrast to chemical pressure results. As AF order is completely suppressed by Fe-doping, a heavy Fermi liquid ground (without $T^\star(B)$ anomaly) is observed.

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