Spin thermopower in the overscreened Kondo model

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We study the spin thermopower in the two-channel spin-1/2 Kondo model which exhibits the phenomenon of impurity spin overscreening and non-Fermi-liquid properties. While magnetic field lower than the Kondo temperature does not strongly polarize the impurity spin, we show that it nevertheless strongly affects the low-energy part of the spectral function. In turn, this leads to characteristic saturation of the spin Seebeck coefficient at the value of $0.4k_B/|e|$ at $T \sim T^*$, where $T^* \propto B^2/T_K$ is the scale of the cross-over between the intermediate-temperature non-Fermi-liquid regime and the low-temperature Fermi-liquid regime. We show that measuring the spin thermopower at low magnetic fields would provide a sensitive test for distinguishing regular Fermi liquid, singular Fermi liquid, and non-Fermi liquid behaviour in nanodevices.