MAR05-2004-000979

Abstract for an Invited Paper
for the MAR05 Meeting of
the American Physical Society

Thermoelectricity as a probe of non-Fermi liquid physics

KAMRAN BEHNIA, CNRS

Recently, the breakdown of the Fermi liquid picture in the vicinity of a Quantum Critical Point has become a subject of special attention. In this context, I will report on recent studies of thermoelectric coefficients in a number of heavy-fermion systems. In $CeCoIn_5$, when the system presents a strong departure from the standard Fermi-liquid behavior, a giant Nernst effect and an unusually reduced Seebeck coefficient emerge. The anomalous thermoelectricity disappears with the restoration of the Fermi liquid by the application of a magnetic field. Another example of anomalous thermoelectricity is provided by the hidden-order state of URu_2Si_2 which is host to a Nernst coefficient of unprecedented magnitude. Yet another remarkable case is the behavior of $CeRu_2Si_2$ close to the meta-magnetic transition. I will discuss the information extracted by probing the thermoelectric response of the system in each case.