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**Giant Nernst effect in the Pr-filled skutterudite $PrFe_4P_{12}$** KAMRAN BEHNIA, ALEXANDRE POURRET, ESPCI (Paris), DAISUKE KIKUCHI, YUJI AOKI, HIDEYUKI SATO, Tokyo Metropolitan University — The phase transition of $PrFe_4P_{12}$ at $T_O = 6.5$ K, probably associated with antiferroquadrupolar ordering, is explored by measuring thermal and thermoelectric transport coefficients. The transition leads to a drastic increase in lattice thermal conductivity pointing to a large drop in carrier concentration induced by the transition and a strong electron-phonon coupling. The low level of carrier density in the ordered state is confirmed by the anomalously large values of the Seebeck and Nernst coefficients. The latter attains a magnitude larger than what is reported for any metal. The results are reminiscent of the hidden-order state of $URu_2Si_2$. According to our analysis of the data, most carriers disappear at the transition, paving the way for an enhanced mean-free-path of both phonons and the residual quasi-particles. Thus, the ordered state of $PrFe_4P_{12}$ emerges as a heavy-fermion semi-metal.

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