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Towards strongly correlated thermoelectrics

S. Paschen

Institute of Solid State Physics, Vienna University of Technology, 1040 Vienna, Austria

There is a stringent need for low-temperature thermoelectrics. One route to find such materials is to combine the properties of strongly correlated electron systems (SCES) with those of filled-cage compounds. SCES typically display giant thermopowers at temperatures below room temperature. In filled-cage compounds such as the clathrates the phonon thermal conductivity can be orders of magnitude lower than in simple crystalline materials. The combination of both properties in a single material in order to obtain large thermoelectric figures of merit turns out to be rather challenging. I will discuss our attempts in this direction.

In collaboration with: S. Budnyk, R. Demchyna, Yu. Grin, U. Köhler, Yu. Prost, W. Schnelle, U. Schwarz, F. Steglich, A. Strydom

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