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Study of Thermal Properties of FeRh Across First-order Magnetic Phase Transition GAOHUA ZHU, Toyota Research Institute of North America, QIYE ZHENG, University of Illinois Urbana Champaign, KHOA VO, DEBASISH BANERJEE, Toyota Research Institute of North America, DANIEL SHOEMAKER, DAVID CAHILL, University of Illinois Urbana Champaign, UNIVERSITY OF ILLINOIS URBANA CHAMPAIGN TEAM, TOYOTA RESEARCH INSTITUTE OF NORTH AMERICA TEAM — The B2-ordered intermetallic compound FeRh exhibits a first-order phase transition from antiferromagnetic (AFM) order to ferromagnetic (FM) order near room temperature, which makes it an attractive material for both fundamental and applied study. Remarkably, the AFM to FM metamagentic transition is also accompanied by large increase in the electrical conductivity and an abrupt expansion in the lattice structure. The corresponding thermal conductivity change caused by the magnetic transition has never been reported. In this study we investigate AFM to FM transition induced thermal transport property change. The FeRh samples were prepared by arc melting and the thermal conductivity was measured by time-domain thermoreflectance (TDTR). We will discuss interplay of lattice and electronic components of thermal conductivity across the magnetic transition.

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