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Thermoelectric Measurements of Magnetic Nanostructures Using Thermal Isolation Platforms A.D. AVERY, R. SULTAN, D. BASSETT, University of Denver, M.R. PUFALL, NIST Boulder, B.L. ZINK, University of Denver — The effective design of next-generation memory storage and logic devices based on spin necessitates a thorough understanding of transport properties of their potential components. Although electrical transport in magnetic materials is well-understood, thermal transport is historically difficult to measure. Using micromachined thermal isolation structures, we make direct measurements of thermal and electrical transport in these systems. Our technique offers a method for accurately measuring films and other low-dimensional geometries from the microscale down to the nano regime. We will present in-plane thermal conductivity, resistivity, and thermopower results, as well as direct comparisons with the Wiedemann-Franz law for films of various thicknesses and preparation techniques. We will also present the extension of our technique to explore an evaporated multilayer film. Finally, we discuss the application of our method to examining the fundamental physics underlying thermoelectric effects, such as thermally driven spin currents, to further the emerging sub-field of spin caloritronics.

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