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Exploring the nontrivial topology of topological metals using electrical and thermal transport

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Experimental techniques to reveal the topology of materials and related properties are limited. Angle-resolved photoemission spectroscopy (ARPES) is a direct way to probe the band structure, but it cannot detect novel transport phenomena in a topological material. Electrical and thermal characterization techniques are therefore useful and necessary. In this talk, I will review experimental characterization methods based on electrical and thermal transports, and present some examples to show how these techniques reveal the nontrivial topological properties of materials. I will specifically emphasize the use of AC transport techniques, which can be used to investigate both the equilibrium properties of a system and the nonequilibrium steady state driven by AC perturbations. The discussions in this talk will demonstrate the power and usefulness of electrical and thermal transport measurements in revealing the topology of materials.

Presenter: Prof. KIM, Heon-Jung (Daegu University)