

Heusler compounds are a promising class of thermoelectric materials that can convert waste heat into electricity. Importantly, they are composed of Earth-abundant elements. Their efficiency depends sensitively on electronic structure, however, challenges in preparing high quality single crystalline samples have inhibited such measurements. Now, as part of a SEED project within the Wisconsin MRSEC, scientists have directly measured the electronic structure of high electron mobility ( $500 \text{ cm}^2/\text{Vs}$ ) FeVSb thin films, using angle-resolved photoemission spectroscopy (ARPES). Surprisingly, the valence band of this material is narrower and the effective mass is higher than predicted by density functional theory calculations. These results call for a re-examination of our understanding of the electronic structure in these materials, and in particular, the potential role of electron-electron correlations.

