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**Title of presentation:** Finding the spark in correlated electrons: Exploring novel electrical and magnetic mechanisms in SmCuAs<sub>2</sub>

### **Abstract**

Our understanding of the fundamental properties of matter tells us what materials and designs we use in technological applications and advancements. Synthesis and characterization of new materials lead to novel phenomena, such as magnetic frustration and strong electronic interaction. One elemental family that exhibits such exciting behaviours is the lanthanide family. Thus, my project focuses on characterizing the electronic properties of SmCuAs<sub>2</sub> by analyzing its resistivity. I also analyzed its specific heat and magnetization. These bulk properties give insight into the quantum signatures of this material. Namely, there is unusual behaviour in the resistivity, and through literature, it is explained via the RKKY interaction. There is also a clear connection between all the measurements: a characteristic ordering temperature that marks a phase transition whereby microscopic magnetic ordering within the material is destroyed at temperatures higher than that point.