**Title:**

Constraining the Results of Simple Thermal Models for NEAs Using IRTF SpeX Observations

**Abstract:**

Near-Earth Asteroids (NEAs) are a critical testbed for many aspects of solar system science by nature of their proximity to Earth. Investigations into planet formation, asteroid dynamics, and planetary defense initiatives all rely on understanding key characteristics of NEAs such as their sizes, albedo distributions, and regolith properties. A common tool for measuring these important quantities are simple thermal models, which often make simplifying assumptions about an asteroid’s shape and surface. However, there has been little rigorous analysis of how these assumptions affect measurements of NEA sizes and other properties. We propose to carry out this in-depth analysis for the first time by using thermal spectra of NEAs obtained using the SpeX instrument on the NASA IRTF. Thermal spectra can be used to generate simple thermal models of NEAs, which can then be compared to more direct measurements of NEA properties. These comparisons will allow us to identify the strengths and weaknesses of simple thermal models. The IRTF SpeX instrument is the only instrument capable of performing this analysis, as we require medium precision spectra that span the three-micron region. By carrying out this analysis, we will gain critical insights into how the assumptions inherent in simple thermal models affect our measurements of NEA properties. This will provide the information needed to make full use of the NEA data from the next generation of asteroid survey missions to better understand both NEAs and the solar system at large.