**Abstract**

* (No need to give a detailed physics background in the abstract)
* We are using the Spitzer Enhanced Imaging Products catalog to search for infrared excess. This data has already been collected but never researched for this purpose. By looking at the blackbody curves of objects with IR excess, we hope to find new stars or other stellar object surrounded by dust.

**Science Introduction and Context**

* When the solar system formed, there was debris left over from the process of planet formation. This debris consists of dust produced by collisions between these small bodies. Though solar radiation removes the dust on timescales much shorter than the Sun’s lifetime, ongoing production results in enough dust to be seen with the naked eye - the zodiacal light. Vega, the fifth brightest star in the night sky, was found to have similar dust production, detecting IR excess, by the Infrared Astronomical Satellite (IRAS).
* (The proposal readers will be familiar with the bb curve so no need to describe in detail).
* Scientists theorize that most celestial objects behave close to blackbodies.

**Analysis plan**

* The Spitzer Space Telescope has obtained images and spectra by detecting the infrared energy, or heat, radiated by objects in space between wavelengths of 3 and 180 microns (1 micron is one-millionth of a meter). Most of this infrared radiation is blocked by the Earth's atmosphere and cannot be observed from the ground.
* This telescope allows us to look into dense clouds of gas and dust that normally could not be observed. Infrared light, however can penetrate these clouds, allowing us to peer into regions of star formation, the centers of galaxies, and into newly forming planetary systems. Infrared also informs us on the cooler objects in space, such as smaller stars which are too dim to be detected by their visible light, extrasolar planets, and giant molecular clouds. Also, many molecules in space, including organic molecules, have their unique signatures in the infrared.
* The Spitzer collected a large number of pointed observations which (the amount of sky they can see at one time) are very small, only about 1/6 the diameter of the full moon. Because they can only see a small amount of sky at once, it would take a very long time to do the whole sky. SWIRE is about the largest area of sky that the Spitzer Space Telescope could realistically survey.
* Data will also be used from The Wide-field Infrared Survey Explorer, or WISE, This survey scanned the entire sky in infrared light, picking up the glow of hundreds of millions of objects and producing millions of images.
* Two Micron All Sky survey , survey of sky using three infrared wavebands is the All-Sky Data Release from the Two Micron All Sky Survey, covering 99.998% of the sky observed from both the northern 2MASS facility at Mt. Hopkins, AZ, and the southern 2MASS facility at Cerro Tololo, Chile.
* Color/Color diagram:

**Educational/Outreach plan**.

* Work with other teachers at FLVS using Blackboard Collaborate in e-sessions
* Professional development in Orange County with the public school district
* Teacher leadership program with AGI/NASA- present at the next meeting
* Present at FAST- Florida Association of Science Teacher in fall, 2014
* Working with UF Astronomy Department and STARS program- a high school program attract students to astronomy related careers