Presentations:

Sfiligoi, Igor, Frank Würthwein, and Christopher Theissen. "Using Condor Glideins for Distributed Testing of Network-facing Services." Paper presented at the 2010 International Workshop on HPC and Grid Applications, 29 May 2010.

Theissen, Christopher, and David Tytler. "PyTracker: Automated Spectroscopic Target Acquisition using Cross-Correlation with Existing Astrometric Positions." Paper presented at the University of California San Diego Undergraduate Research Conference, 24 April 2010.

n the Open Science Grid." In review.

Quimby, Robert, Shrinivas Kulkarni, Mansi Kasliwal, Avishay Gal-Yam, Iair

problem solving techniques, and creating a newfound interest through real-world applications of the material they were learning. By creating an interest in these students, I opened new

Circumstellar disks, dust and gas around young stars, are likely precursors to planet formation. To date, minimal data has been analyzed from large populations of disks to quantify general principles regarding correlations between disk, host star, and their place in the Galaxy. How many stars actually have disks? Are there correlations between disks and stellar properties that can be used to constrain stellar age?

To collect data from a large population of M dwarf stars, I will to use a spectroscopic catalog of over 70,000 M dwarfs compiled by West et al.[4] using the Sloan Digital Sky Survey (SDSS). This catalog contains coordinates, distances, SDSS and Two Micron All Sky Survey (2MASS) photometry and spectroscopic data, and spectral types. With this catalog it is possible to acquire photometric data from a large sample of M dwarfs to model and analyze spectral energy distributions (SEDs). Coursework in stellar structure, evolution, and planetary formation will provide insights into modeling SEDs for M dwarf stars and circumstellar disks.

In executing my proposed study, I will first cross match the photometric data from WISE, 2MASS, and SDSS. To fully characterize the disk population, photometric data must be collected over longer wavelengths to probe these cold, more diffuse disk states. I will supplement the WISE, 2MASS, and SDSS data with photometric measurements at longer wavelengths (40 – 670 μm) from the Herschel Space Observatory and Spitzer. These longer wavelengths will allow the proper modeling of the SED for characterizing cooled disks.

Due to the large-scale nature of this project, there will be ample opportunity to involve undergraduate students in data collection, modeling, and analysis. As part of my long-term outreach efforts, I would also like to propose time on the Discovery Channel Telescope, which Boston University is assured 15% use, to perform spectroscopy on candidate M dwarfs that show interesting emission features. Observation is one of the hallmarks of Astronomy outreach, and by involving students, both at the university and high school level, I hope to introduce young minds to more advanced topics in astronomy and bring a fresh new perspective to our science.

References:

1. Bochanski, J. J., et al. 2010, AJ, 139, 2679
2. Howard, A. W., et al. 2011, arXiv:1103.2541
3. West, A. A., et al. 2006, AJ, 132, 2507
4. West, A. A., et al. 2011, AJ, 141, 97

PTF, which have high luminosities, approximately 10 times brighter than typical Ia supernovae, and high redshifts (z between 0.1 and 0.2), whose processes cannot be explained by typical supernovae models. These events fall within the theoretical range of pair-instability supernovae and thus strengthen our understanding of stellar evolution for massive stars with low metallicity.