Interview Note for Oberlin College

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A brief history of me

Year	Institute/Position
2001/09 to 2005/06	B.S., Department of Physics, National Central University (Taiwan)
2005/08 to 2011/08	Ph.D., Department of Astronomy, University of Illinois at Urbana-Champaign
2011/09 to 2013/08	NASA Postdoctoral Fellow, NASA Goddard Space Flight Center
2013/09 to Present	Postdoctoral Research Associate* ¹ NASA Goddard Space Flight Center and Center for Space Science and Technology (CRESST), ² University of Maryland Baltimore County *80% time for support work of the Swift Burst Alert Telescope 20% time for personal research

What do I do now?

- \sim 80% supportive work of the Swift Burst Alert Telescope
- \sim 20% personal research

What do I do now? ~80% supportive work: Swift Burst Alert Teleceope (BAT)

- Maintaining auto scripts
- Write new scripts to improve the science return (e.g., auto scripts that search BAT data for GW triggers)
- On shifts for the BAT burst scientist and Burst Advocate; Also, I arrange those shifts.
- Provide BAT data analysis and assistance.
- The 3rd BAT GRB catalog

What do I do now?

 \sim 20% personal research:

Gamma-ray bursts (GRBs) and multi-messenger studies

- Connecting GRB observations and theories
 - Tools: 3rd GRB catalog, trigger simulator
 - Science: Early universe, Origins of GRBs (GRB rate; E&M counterparts for gravitational wave triggers)
- Multi-messenger studies.
 - E.g. Swift/BAT (hard X rays) and Fermi (gamma rays), Suzaku/WAM (gamma rays), IceCube (neutrinos), aLIGO (gravitational waves), MAGIC (high energy gamma rays), NuSTAR (soft X rays), EVLA (radio), and PTF (optical)
- Forecasts for upcoming telescopes/surveys
 - TAO (transient astrophysics observatory)
 - Forecasts for short GRB detections (LIGO followups)

What do I want to do at Oberlin?

- Interact with undergraduate students! Teaching:
 - Existing classes: undergraduate physics & astronomy
 - e.g., astrophysics I & II, ASTR 100, computational modeling, musical acoustics.
 - New classes:
 - Observational Astronomy: theories and lab courses that introduce techniques/tools and basic results in observational astronomy
 - Things we don't know about the Universe: e.g., "A Guide to the Unknown Universe" – title from a PhD comics book
 - Introduction to Cosmology: A more in-depth cosmology class
 - Computational Astrophysics: Python, R, Machine Learning, statistical techniques used in astronomy
 - Killer Sky: astrophysical objects that will kill us (e.g. supernovae, gammaray bursts)
 - Extraterrestrial life
 - High-energy astrophysics
 - Animating/Visualizing astronomy: GRB music, Animating Fermi
 - Online courses?
 - The Oberlin Observatory
 - Solar observation, night observations, following up GRBs (implementing an robotic system for automatic followup, like the Goddard Robotic Telescope)?

What do I want to do at Oberlin?

- Interact with undergraduate students! Research
 - Continuing my research in gamma-ray bursts
 - Using Swift/BAT data and trigger simulator to connect theories and observations
 - Immediate projects:
 - » Improving the trigger simulator for events close to detection limits
 - Study instrumental effects on GRB durations (important to understand GRB origins)
 - » Observational characteristics of short-GRBs based on theories
 - » Characteristics of high-redshift GRBs
 - Collaborating with undergraduate students!
 - Students will learn: data analysis and data mining (lots of data available!), Unix environment, Python, Shell Scripts, Statistics, Machine-learning algorithms (for specific projects), presentation and paper-writing skills.
 - Easy to put into small sub-projects that are suitable for a summer/semester research
 - All of these projects will be published, and students will be co-authors.
 - Keep collaborating with people at Goddard, the Swift team, and many institutes.
 - Get grants to support students for internships at Goddard and other institutes (e.g., Universities in Japan and Taiwan).

Questions:

- How is life like at Oberlin College? Both the college and the town.
- How much time does a faculty usually spend on teaching and research? (and service?)
- What kind of people are better suited for a liberal art college? What do you think is the most important quality for a faculty at a liberal art college?
- What are the students like at Oberlin? Class size for major and non-major classes? (According to Dan's email, 12 Physics/astronomy majors per year).
- What do students major in physics/astronomy usually do after graduate?

Questions:

- For each semester and the winter/summer term, how many undergraduate students does a faculty works with on research projects usually?
- What exactly is the winter term?
- Is it possible to continue my collaboration with Goddard people? Is it possible to arrange students to Goddard (or foreign institutes) for an internship?
- How is the teaching and research evaluated for a faculty?
- what is the obligation during summer? What do student do during summer?
- Can a faculty take classes on campus? E.g., music and language classes?
- What kind of people are better suited for a liberal art college?