Interview Note for Oberlin College
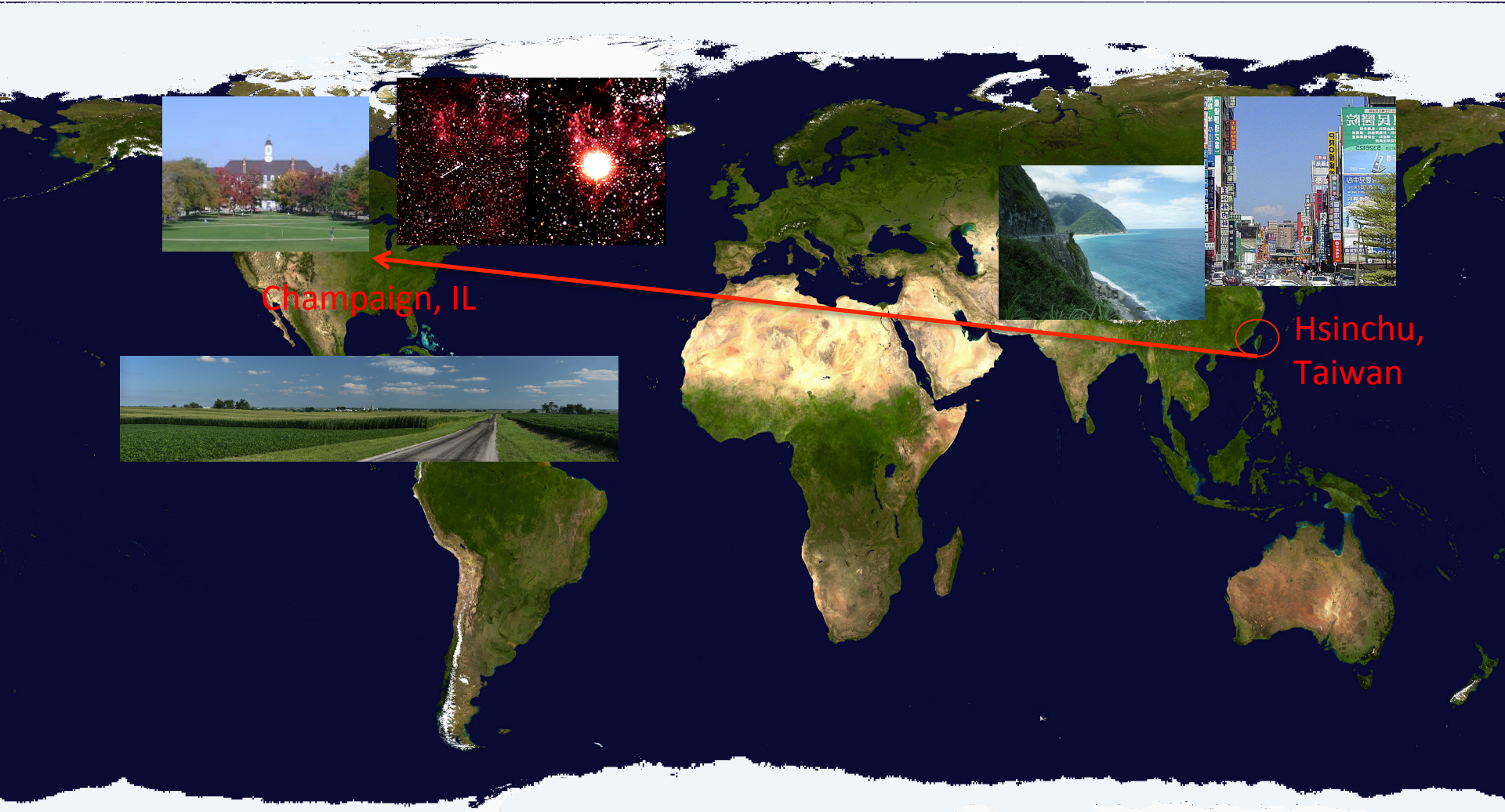
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How did I get here?
- From Taiwan to DC

(Slides from my talk for Goddard interns)

Champaign, IL

Hsinchu, Taiwan

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What do I do now?

- ∼80% supportive work of the Swift Burst Alert Telescope
- ∼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.

- 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, gamma-ray 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)
        - » 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?