AN NAOJ-PRINCETON ASTROPHYSICS COLLABORATION: The View from Princeton

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Outline of Topics

- History of large observational projects at Princeton
- Princeton's current large project situation
- Past Japanese-Princeton astrophysics collaborations
- Princeton goals and *non-goals* for a collaboration
- Specific elements of the collaboration plan
- Organizational/administrative plan
- Challenges and rewards

Princeton's Past Large Observational Projects

Although theoretical work has consistently been the most active area of research at Princeton, since the 1950s at least one major observational program has also been an important element of the Department's efforts. (Durations ~ 10 years) These projects provide the Department's presence in and connection to the world of observational astronomy.

- Visit/exchange program with Carnegie/Mt. Wilson Obs.
- *Stratoscope* balloon borne telescope project
- *Copernicus* UV space telescope
- *Hubble Space Telescope* planning and preparation
- APO 3.5-meter remote operation telescope
- *Sloan Digital Sky Survey* (I & II)
- *WMAP*

Current Large Project Situation

- APO 3.5m, *SDSS-2* & *WMAP* projects concluding
- Involvement in a few new large projects (*ACT, LSST, SDSS-3*) but not seen as being main Dept focus
- Dept has also considered involvement in several other large future projects: *PanStarrs, TMT, GMT, SPM 6.5m's,* two small satellite survey projects (NIR & transits), …
- Dept declined a few simple "buying time" opportunities on existing 8-10m class telescopes
- <u>Significant University funds available to Dept for a next large project</u>

For roughly the last 30 years Japanese and Princeton astronomers have been closely connected by a sustained series of formally unrelated research collaborations at the individual scientist level and one major formal collaboration (*JPG/SDSS*) which both have involved a large number of Japanese astronomers and most of Princeton's senior research staff. This activity has been associated with many short and long term visits by Japanese researchers to Princeton and vice versa and is felt to have been of great benefit by the Princeton participants.

Princeton Goals for the Collaboration

- The next major (~10 yr) Dept observational activity
- Provide opportunities for scientifically important and technically innovative work by Dept observers at all levels of the research staff, including students, and involving a full range of activities (instrumentation; project definition; software; data acquisition, reduction, analysis, interpretation; publication; public outreach)
- Combine our resources with those of NAOJ and the Japanese astronomical community to benefit both
- Secure, promote and formalize our long standing connections with the Japanese astronomical community
- Span major areas of long-term scientific interest among the Princeton observers (and, at least partially, theorists!)
- Carry out excellent, world-class astronomical research via both large survey programs and smaller scale projects

Princeton *Anti-Goals*
(What we do ***not*** want!)

- Purchase of telescope time for separate (*i.e.,* non-collaborative) projects
- Elaborate and complex management or organizational arrangements requiring many non-scientific committees and meetings
- Any need to greatly expand the size of the observational staff of the Department

Specifics of the Collaboration Plan I

- PU will provide US$10 million to NAOJ for upgrade of *Subaru's* top-end to support *HSC* and other possible future (heavy) prime focus instruments, *e.g.*, a wide-field, multi-object spectrograph
- PU will provide US$4 million**+** of in-kind contributions to the *HSC* and *HiCIAO* instruments/projects
- PU astronomers will join and participate on the science teams carrying out large survey projects with these instruments on an equal and collaborative basis
- PU will work with NAOJ to promote collaborative projects, large and small, between Japanese and Princeton astronomers, **including organization and facilitation of long and short term visits for research purposes in both "directions".**

Specifics of the Collaboration Plan II

- With NAOJ's encouragement, PU astronomers will propose for *Subaru* Open Use time through the normal TAC system to carry out smaller observing projects, typically in collaboration with Japanese colleagues. This will have the additional benefit of developing their familiarity and expertise with the facility.
- PU astronomers will seek to use major astonomical data sets to which they have special access or with which they have particular expertise in collaborative projects with Japanese colleagues. Examples include the *SDSS, WMAP* and *ACT* data sets.
- PU and NAOJ will explore possible future areas of collaborative efforts, not limited to *Subaru* projects.

Organizational Plan I

- NAOJ and PU will form an institutional collaboration by signing an MOU (“Collaboration Agreement”)
- A term of 10 years, option to extend if mutually agreed
- Option to extend in scope if mutually agreed
- Option to increase membership if mutually agreed
- Name TBD: J-PA[R]C, N-PA[R]C, S-PA[R]C where “-PA[R]C” is “- Princeton Astrophysics [Research] Collaboration” and “J”, “N” and “S” are “Japan”, “NAOJ” and “*Subaru*”, respectively…or something else…ideas??

Organizational Plan II

- A Collaboration Council will have management, oversight, implementation & reporting responsibilities for the collaboration and its activities
- NAOJ Director appoints 4 representatives & Chair
- PU Dean of Research appoints 3 reps & Vice-Chair
- Council meets once per year in-person + as needed
- Council does not have authority over scientific and technical decisions; they are the responsibility of the science team carrying out each research project.
- Council will operate “in an open and collegial manner that promotes consensus & that advances the goals & interests of both parties on an equal basis”.
- Council does not have any legal authority otherwise belonging to NAOJ or PU

Challenges and Rewards

- Challenges
  - Geography (jetlag & time zones)
  - Language (Shoganai!)
  - Culture (Kuro Fune)
  - Size (a national program vs. a single university)
  - Non-additive dimensions (not just ¥/$ and FTEs)
- Rewards
  - Excellent science ←
  - New (& old!) long-term colleagues/connections ←
  - Advantage in securing additional resources
  - A (small) contribution to internationalism

Conclusion

一生に頑張りましょう！

Let’s work together!