開発計画、今後の予定
R&D plan, schedule

早野裕(Yutaka Hayano)

Next Generation AO working group

To think about a next step.

- Science goal
  - Role of Subaru Telescope in 2020s.
  - Synergy and competition.
- Technical feasibility
  - Advanced AO (Adaptive Secondary, Laser, algorithm)
- Budget

Management issues

- Stakeholder
  - Japan community. Mauna Kea. Partners.
- Project definition
  - Scope
- Organization

What has been done
これまで進めてきたこと

- Start working group activities for next generation IR instrument. (~2009)
- Start next generation AO working group. (Jan)
- Future instrument workshop. (Jan)
- Next Generation AO workshop. (Sep)
- Science case study. (Kodama & Nishiyama's talk)
- AO for ELT conference at Victoria. (Sep)
- GLAO/MOAO simulation. (Oya's talk)
- Observation simulation. (Iwata & Minowa's talk)
- Studies and reports of other GLAO/MOAO system. (Gemini, VLT etc.)
- Strawman design of NIR wide field instrument. (Iwata's talk)

Next step
Science goal

- Establish well-defined scientific goals and requirements.
  - Science case documents.
  - Simulation and analysis of observation.
  - Report of pre-conceptual study.
- Synergy of Subaru future instruments, TMT, etc.
- Competitive analysis against other projects.

Next step
Technical feasibility

- Seeing measurement. (Ground layer).
- Investigation of existing technologies.
- Strawman system design.
  - Adaptive Secondary Mirror, multiple LGSs, wavefront sensors, wavefront reconstructor algorithm, etc.
  - Trade-off analysis.
- Start R&D for key technologies.

Next step
Project, budget, organization

- Project initiation.
  - Built up an organization.
  - Collaborators. (Technology and science case)
- Cost estimation.
  - Critical subsystem. (ASM, Laser etc.)
  - Telescope upgrade.
- Budget plan.
  - Research promotion budget of NAOJ.
  - Grant-in-aid scientific research.
  - Mauna Kea community. International collaborators.

Schedule backward from goal
目標から遡ると？

- 2019: Commissioning starts. Engineering FL.
- Integration and testing. (2017-2019)
- Manufacturing. (2016-2018)
- Final Design Review. (Mar. 2016)
- Detail design. (2014-2015)
- Preliminary design review. (Mar. 2014)
- Preliminary design and analysis. (2013-2014)
- Conceptual design review. (Mar. 2013)

Time line.

- FY2012: Feasibility study. Planning phase.
  - Submit proposal to grant-in-aid scientific research.
  - Conceptual design review.
- FY2013: Project starts. Prototyping.
  - Preliminary design review.
- FY2014: Detail design starts.
- FY2015: Critical design review. -> Manufacture starts.
- FY2016-18: Manufacturing.
- FY2017-19: Integration and testing.
- FY2019: Commissioning starts. Engineering FL.
- FY2020: Risk-shared science operation starts.

AO specific issues

- Frontier of observational astronomy.
- Challenge in instrumentation.
- Application to other scientific and engineering research (Vision, biology, medicine, laser technology, optics, beam control, fusion, communication, etc.) and commercial products.

お願い
Ask a favor of you.

- Inputs. (questions, comments, critics, etc.)
- Collaboration. (University, International organization, etc.)
- Close communication with other projects.
  - HSC/PFS, Keck, Gemini, UH, CFHT, TMT, GMT, E-ELT, JWST, etc…
- Discussion on strategic future plan of Subaru in 2020s.
  - Subaru, NAOJ, GOPIRA, ASJ, Japan.

Question

- Shall the working group of Subaru next generation AO proceed further?

- ngaowg mailing list member
  - Masayuki Akiyama,Takashi Hattori, Yutaka Hayano, Ikuru Iwata, Tadayuki Kodama, Yosuke Minowa, Kentaro Motohara, Tetsuo Nishimura, Nagayoshi Ohashi, Yoshito Ohno, Shin Oya, Mai Shirahata, Hideki Takami, Naruhisa Takato, Naoyuki Tamura, Ichi Tanaka, Hiroshi Terada, Daigo Tomono, Tomonori Usuda

Goals of This Session

- Share the present results of studies carried out by the Next-Gen AO working group
- Science cases: are they strong enough?
- Discussions on Subaru future instrument strategies, especially for Next-Gen AO

What is coming next.

- Science workshop in summer, 2012.
- Grant-in-aid scientific research.
  - PI, organization, etc.