

Keck Institute for Space Studies
Solicitation for 2022 Study Program Proposals

Solicitation Release Date: 01 October 2021

Overview

Proposal Concept Due Date: NOON 01 November 2021

Study Program Proposal Due Date: NOON 20 December 2021

The Keck Institute for Space Studies (KISS) is soliciting proposals for Study Programs to be carried out during the 2022 calendar year.

The goal of the Keck Institute is to develop ideas and concepts that have the potential to revolutionize space science and engineering, especially those that have the potential to impact or create future space missions. The Institute will do this by convening study programs and workshops that bring together leading scientists and engineers from the external research community along with the best engineers and scientists from JPL and the Caltech Campus. We are interested in bringing people together in novel ways on in-depth collaborations that will pursue new scientific and technical directions.

We intend to select and support 4-5 Study Programs for the 2022 calendar year. Submitting a concept proposal is the first step in developing a proposal for a 2022 KISS study. All selected study programs will be eligible to propose for one year of technical follow-on funding at the successful conclusion of their study program and submittal of final report. Should additional funding be made available in the future, technical development follow-on teams may propose for a second year of funding.

Study program concepts are solicited in the areas of space engineering, planetary science, remote sensing and earth system science, astrobiology, and astronomy and physics from space. We very much encourage proposal concepts from individuals outside the JPL and Caltech communities as well as individuals from JPL and Campus.

The Keck Institute is looking for approaches that would not happen without KISS sponsorship. We are looking for technically oriented studies that significantly advance a field. Proposals for incremental advances are not solicited here.

- We especially encourage proposal concepts for studies that might involve a partnership in the study program between KISS and another organization. Potential partners could include commercial industry, private sector organizations including foundations, or government organizations. We encourage innovative concepts in this regard.
- While we strongly encourage proposals to have an external lead, a JPL lead, and a Caltech Campus lead, this is no longer a strict requirement.

We will also consider proposals for 1-2 day symposia that are interdisciplinary in nature and that would highlight the Campus/JPL leadership in a new or strategically important area. If interested in proposing a symposium, please contact Michele Judd directly at mjudd@kiss.caltech.edu or 626-395-6630.

Your proposal concept should include:

- 2-page Proposal Concept (see template on website): submitted as a pdf

The *proposal concept process does not have a go/no-go decision associated with it* as some other proposal concept phases do. The proposal concepts allow the KISS steering committee to understand the breadth of the proposals coming in, and to help proposal teams develop the best proposals possible.

Final proposals are due in December and involve a 5-page Proposal with required appendices (see template on website): submitted as a pdf.

Characteristics and Components of a KISS Study Program

Study programs will have the following characteristics. They:

- are stimulated by recent scientific or technical advances,
- show promise for making a significant impact on future space missions,
- illustrate strong participation by both Campus and JPL,
- include participation by key elements of the external scientific and technical communities, including industry as appropriate, and
- provide significant opportunities for frequent and sustained technical interaction between participants.

Components of a Study Program:

- One or more workshops
 - If only one workshop is held, it must be a minimum of 5 days duration and up to a maximum of two weeks duration
 - If more than one workshop is anticipated for the study, the first (opening) workshop must be a minimum of 4 days in duration
- Short course at the start of the first workshop for interdisciplinary exchange and building a common vocabulary
- Opportunities for junior members to participate (junior members are nominated into the program by the core participants after the core participants are selected and accepted to the program)
- Recommended study periods for face-to-face interaction between core participants, including visitors (optional)
- Open technical talk or public lecture – typically during the second workshop (optional)

- Final report

Criteria for Selection

The selection of the KISS Study Programs will be based on the following criteria:

- potential for generating innovative new ideas with significant promise to impact the way that future space missions are carried out
- quality of the core-group participants, and of letters of commitment from the co-leads and participants indicating their willingness to fully participate in and/or lead the study
- balance between, and diversity of, JPL, Campus, and external participants including (but not limited to) academia, national labs, government agencies and private industry
- quality of the plans for formal and informal technical interactions between the core-group participants – including in particular how ties between JPL and Campus will be strengthened
- quality of the plans for how the Study Program events will be implemented, e.g., plans for a workshop, talks and seminars, and other possible events
- opportunities for junior members of the community to participate in program activities, and
- co-sponsorship/partnership (external funding) that can be leveraged to support the study.

Quality of the proposed study program is the primary criterion. Preference will be given to those study program proposals that provide specific plans for significant technical interaction between participants.

Proposers may wish to look at the descriptions of previously funded Keck Institute programs that can be found at:
<http://kiss.caltech.edu/programs.html>.

Proposal Requirements

Proposals for Study Programs should be no more than 5 pages in length plus the required appendices (no page length constraint). Additional supporting material may be attached, but all essential information must be included in the five-page **Program Description and Rationale** primary proposal **plus the required appendices** (core participant listing, letters of commitment).

The proposal should include the following information:

Program Description and Rationale (i.e. 5-page primary proposal)

- Name of the Study Program

- Name of the Co-Leads (*while we strongly encourage proposals to have an external lead, a JPL lead, and a Campus lead, this is no longer a strict requirement. There must, however, be one lead from Campus or JPL.*)
- Description of the goals of the Study Program
- Rationale of why the Study Program has the potential to develop innovative new ideas for future space missions
- Specific technologies or recent scientific developments that make a compelling case that a major study should be undertaken at this time
- Partner/co-sponsoring organization (if any) and description of support
- Description of how the program will benefit collaborations and interactions between Campus and JPL, and between external participants and JPL/Campus
- Strength of study team, including description of how the diversity of proposed study team reflects the diversity of the various disciplines
- Proposed format of Study Program
 - o Proposed dates and schedule for the Study Program
 - o Include plans for talks, seminars, and workshop(s)
 - o Include plans for formal and informal interaction sessions among participants – note: KISS workshops should be 50% discussion based (either in small groups or plenary lead discussions)
 - o Include plans for other proposed events (e.g. social events, public lecture, short course)
 - o Plans for team member communication (e.g. team-managed Google doc site or KISS-provided wiki, team teleconferences, etc.)
- Opportunities for junior members of the community to participate

Required Appendices:

A. Study at a Glance (see template)

- a. Workshop Information - # of workshops and first workshop length (number of workshop days? See minimums on page 6 below.)
- b. Short course planned?
- c. Plan to include junior members?
- d. Open technical lecture or public lecture planned?

B. List of Core Participants and Contact Information (see template)

Names of a candidate group of 18 core participants (including the co-leads) with home institution, discipline, e-mail and telephone contact information; (A final addition of 6 core core-group participants will be negotiated / finalized upon acceptance of the proposal with members of the KISS steering committee. The final number of core participants is expected to be around 24.)

Note: Study participants often wish to have young scientists and engineers accompany them when they participate. KISS encourages such participation and will work with the study organizers to provide support and accommodation for early career scientists and engineers. Six additional spots for graduate students, postdocs and early career hires will be filled *after the core participants have been accepted into the program*. Only core participants may nominate candidates for these slots. This will bring the total number of study attendees to 30.

C. Letters of Commitment

Letters of commitment from the 18 candidate participants (*including co-leads*) indicating their willingness to fully participate in and/or lead the study are required. One of the selection criteria will be the strength of these letters of commitment, and in particular – the strength of the letters from the co-leads. No more than 18 letters of commitment may be submitted.

Optional Appendix:

D. References

Study programs may submit papers or any other reference material that they think will provide the steering committee with information that will strengthen their proposal.

A proposal concept (see template on website) is requested by NOON 01 November 2021. Proposal concepts may be shared with JPL Directorate Scientists and Technologists or Campus Division Chairs.

Proposals are due by NOON 20 December 2021. Proposal concepts and final proposals should be submitted electronically via instructions located at: http://kiss.caltech.edu/programs/2022_proposals.html#guidelines.

KISS Support for Study Programs

Workshops: The Keck Institute will support on-site costs associated with workshops.

Local participants should expect to cover their own costs incurred while attending the workshops.

The Institute has limited travel funds for visiting attendees to workshops; it provides partial support travel for the few who need it. The Institute gives funding preference to graduate students, postdocs, and early career scientists, engineers, and technologists who may not have much of a travel budget. Funding preference is also given to those folks who can pay a portion of their travel and share costs with the Institute.

KISS does not provide labor support to participate in a study program.

Visitors Coming to KISS to *Continue Work* on Study after the Workshop(s):

Full travel support is provided for external core-group participants in study interactions that take place outside any of the proposed workshop(s).

Support from Keck Institute personnel: Keck Institute personnel will provide support for organizing the workshop associated with the Study Program as well as support for visiting participants.

Facility Support: The Keck Institute is located at the Keck Center on the NW side of the Caltech campus (just NW of Beckman Auditorium). The center has the 30-person Think Tank, the 10-person Black Hole conference room, the 10-person Oort Cloud lounge and a number of interaction spaces available for use.

Web support: The Keck Institute will provide web support for a public website for study program activities, a workshop registration site, archiving of talks, etc. A password protected wiki (if requested by the team) is also available for the study team members to have a shared workspace on the web.

Final Report Support: A small amount of discretionary support will be provided for illustrations, copyediting and writing support as deemed necessary by the team leads.

JPL Support for Study Programs

KISS is a joint institute between Campus and JPL. JPL supports its own participation in Institute activities through the JPL R&TD Program. In addition to submitting a proposal to KISS, JPL Co-Leads must request R&TD funding to support JPL participation in the study – please contact Christina Richey at JPL to review the process to obtain JPL support.

Additional Information and Comments

Study Format:

Successful formats for past study programs include, but are not limited to:

Long term study (the most common type of study)

- A 4-5 day opening workshop (see requirements in proposal template) to frame the challenge and outline the path of further investigation with an opening short course and an open/public lecture
- Interim sub-team meetings between workshops
- A 3-5 day closing workshop to finalize the recommendations of the study.

Focused study

A 5-day workshop format where the challenge is extremely clear and little time is required to bring an interdisciplinary team up to speed in order to attack the problem.

Intense, community-building study

A 2-week format in which the first week focuses on exchange of information via a set of scheduled talks/seminars (still encouraging significant interaction), while the second week allows for less-structured interaction and brainstorming among core-group participants.

Symposium

A 1-2 day symposium format which is interdisciplinary in nature and has a compelling reason why the uniqueness of KISS support is an enabling factor, and Campus/JPL leadership in this area is strengthened or maintained. Note: to propose a symposium, please contact Michele Judd at mjudd@kiss.caltech.edu or 626-395-6630 directly.

Organizers should consider the above formats but are allowed to propose other study formats as long as the minimum opening workshop meets the requirement for workshop length.

The Institute is looking for a range of proposals that encompass the various formats described above.

KISS Steering Committee Members: Proposers are encouraged to contact members of the KISS Steering Committee for further information or advice. A list of the members can be found here:

http://kiss.caltech.edu/steering_committee.html.