2024B Caltech Proposal Template v2024B-0.0dev

Project Advocate

General Instructions: 2024B Caltech proposals for Keck and Palomar observing time shall follow this Observing Proposal Template. Proposers shall retain original font sizes (11p) and margin setup from this template, and observe specified page limits for each of the three sections below. Complete all sections by replacing the section descriptions/instructions in the sections below with your responses.

1. ***Scientific Justification:*** Maximum of three (3) pages including project title, narrative, figures, tables (exclusive of observing lists), and references. Palomar Large Program requests may use an additional three pages; and separately, should address scientific management and public data release plans.

The Scientific Justification should provide a clear explanation of the background, context and motivation for your proposed observations. It should justify the expected outcome(s) and why they are important and timely. Not all (and perhaps no) TAC members will be specialists in the specific field of your proposal, so proposers are strongly advised to place the significance of the proposed observations into broader context. We recommend asking yourself “why should a knowledgeable astronomer care or get excited about these observations?” and ensure that question is clearly answered in your Scientific Justification.

Proposers are encouraged to justify the “science efficiency” of the proposed observations, i.e. the scientific gain relative to the total program observing time and any other risks involved. The “risk vs. reward” of the proposed program should be clear and justified. This is especially important for Large Programs that are expected to require (or already have required) more than one semester, and also very small requests (e.g. 0.5 nights).

1. ***Technical Justification:*** Maximum of 1.5 pages ADDRESSING all subsections below
	1. ***Telescope & Instrument Justification***: articulate why Keck and/or Palomar? + selected instrument(s) is (are) the right combination to address the observing objectives.
	2. ***Exposure Time Justification*:** Clearly state and JUSTIFY the requested exposure times for the proposed observations, and the minimum signal-to-noise (S/N) required if applicable; for spectroscopy, the wavelength region or spectral line where that S/N is to be achieved; the exposure times and overhead calculations for all targets; and the total number of nights requested. Including a worked example for a “typical” target from longer target lists is acceptable (and justify why the chosen target is “typical”). If you have targets with a range of properties, include calculations for illustrative, extreme cases.
	3. ***Lunation Justification:*** JUSTIFY (not merely state) the lunar phase(s) in which your observations are feasible and efficient. For example, do you really require dark time? Demonstrate why that is. How much more observing time would be required if gray nights were used? Providing an example S/N calculation is best (with all the other parameters kept the same as in the previous section). Keep in mind that all gray nights have some fraction of their time when the Moon is not up, so ensure your estimate of the increased time required accounts for this. Similarly, can you really observe your targets in bright time? Demonstrate why this is the case. Discussion presented here should support the selection of P’s and A’s on the corresponding Keck and/or Palomar cover sheet.
	4. ***Target Accessibility***: Detail the accessibility of targets for the requested nights IN THIS SEMESTER. This must include the number of hours the field is above the Nasmyth platforms (rising or setting limits imposed by Keck I and Keck II; see Keck Telescope Pointing Limits Description ([h](http://www2.keck.hawaii.edu/inst/common/TelLimits.html)ttp[://www2.keck.hawaii.edu/inst/common/TelLimits.html](http://www2.keck.hawaii.edu/inst/common/TelLimits.html)) and Keck Observation Planning (<https://www2.keck.hawaii.edu/software/obsplan/obsplan.php>) for details). Include the amount of time that the targets are inaccessible (if any) and detail the observations and science that will be done during this time.
	5. ***Scheduling Flexibility/Date-Specific Observing:*** Describe all aspects of your proposed observations which are flexible with respect to, for example, telescope & instrument availability, instrument set-up, lunation, dates, distribution of time (e.g. multiple night gaps allowed) etc. Flexibility will aid the TAC and Keck in approving and scheduling your proposal. This may be especially important when over-subscription rates are higher for one Keck telescope than the other. Conversely, if your project is or includes date-specific observation components STATE and JUSTIFY those needs here. Discussion in this section should support the selection of P ’s and A’s on the corresponding Keck and/or Palomar cover sheet.
	6. ***Cadence/TOO Program Justification***: If the proposed project is an application to the WMKO Cadence Observing or Partnership Target of Opportunity programs or the Caltech-internal TOO program SPECIFY which (WMKO Cadence or TOO, Caltech TOO) program(s) is (are) being applied for, and JUSTIFY the request as appropriate for the selected program(s). Further, TOO proposals shall list (1) TOO Trigger Criteria, (2) the estimated number of events in the proposal semester (with basis for estimate), and (3) justification for exposure time (referencing section 2.2 above).
	7. ***TOO Interrupt Protection Justification:*** Conversely, WMKO Partnership and Caltech-internal TOO program policies provide for limited protection from TOO trigger interruption. Advocates that seek “uninterruptable” status for some or all of their proposed observations should make and justify that request in this section.
	8. ***TOO Reporting***: TOO proposals from previous successful TOO investigators **shall** report on **all** TOO triggers activated in the previous two (2) semesters, and the status of data resulting from same.
2. ***Supplementary Information:*** Maximum of 1 page ADDRESSING all subsections below
	1. ***Backup Program (for Keck proposals only):*** Describe and justify a backup program to be undertaken if prevailing weather conditions at the telescope, including seeing, prevent execution of your main program (one paragraph). This is particularly important if your proposal relies on instruments or facilities which are still in shared-risk mode or regularly lose time to technical problems or weather (e.g. laser guide-star adaptive optics); for these cases, contingency plans MUST be JUSTIFIED here. Keep in mind that laser guide-star programs may unpredictably suffer from satellite collision closures (sometimes as much as an entire night) and cannot operate when light-to-moderate cirrus prevails. Don't forget to allow for any pointing restrictions that may apply to your backup program/targets.
	2. ***Response to Caltech TAC Feedback:*** If this proposal is a continuation or resubmission of a prior proposal for the same or similar scientific program you MUST include a copy of the most recent Caltech TAC program-specific feedback (i.e. not the general cover memo, but the program-specific comments) and respond to each of the points raised, demonstrating how and where these have now been addressed in this proposal.
	3. ***Future Applications:*** Clearly state and JUSTIFY the number of Keck and/or Palomar nights required in future semesters for the COMPLETION of the proposed project. If no additional nights are described here, TAC will assume that the project will be completed if the number of nights requested in this proposal is awarded and successfully completed. If additional time is requested in future for a putatively-completed project, the reasons for the new request must be very clearly explained (e.g. new targets have been identified that make a compelling scientific case for enlarging/continuing the project).
	4. ***Keck Archive Observations:*** The Keck Observatory Archive (KOA; see <http://www2.keck.hawaii.edu/koa/public/koa.php>) makes nearly all Keck data publicly available after a proprietary period (usually 18 months). Proposers MUST check the KOA for any available observations of their target(s) (and/or similarly useful ones), using a comparable instrumental set-up to that proposed here and state explicitly that such a check was carried out (even if no matches were noted). If similar prior observations were found then JUSTIFY why new observations are warranted.
	5. ***The Pilina and Kōkua Initiative:*** Directors at COO, UCO, and WMKO have identified a need for mainland astronomers to increase engagement with the Hawai’i community. We are therefore initiating a multilateral Pilina and Kōkua Initiative to increase interaction between these two important groups; please see <https://sites.astro.caltech.edu/observatories/coo/solicit/PKI.html> for details. Proposers should indicate in the proposal their (or a representative’s) willingness to participate in this initiative. Expressions of interest will not impact TAC grades or time allocations.
3. ***Target List:*** Use the table template below to include a representative target list. You may add columns but do not rename, replace, reformat, or delete columns already in the template. Please note that target coordinates are listed in sexagesimal (<https://en.wikipedia.org/wiki/Sexagesimal>) format: RA in

hh:mm:ss, Dec in dd:mm:ss. Observing lists do not count against page totals.

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| **Object** | **RA** (hr, min, sec) | **Dec** (deg, min, sec) | **Magnitude/band** |
| 3C 273 | 12h 29m 06.7s | +02d 03m 09.1s | 12.8 V |
| 3C 336 | 16h 24m 39.1s | +23d 45m 12.1s | 18.5 V |
| HD 210027 | 22h 07m 00.7s | +25d 20m 42.4s | 2.50 K |

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22 February 2024 – AFB/CM/JXZ/SRK/AWH/ENK/RJB