

PALOMAR 200-INCH TELESCOPE



**DATE:** September 6, 2022

**TO:** Distribution

**FROM:** Michael Werner for the JPL Palomar Advisory Committee (JPAC)

**SUBJECT:** JPL/IPAC Palomar 200-inch Observing Time Proposals for Semester 2023A, covering the period 1 February, 2023 to 31 July, 2023.

Proposals for observing time with the 200-inch Hale Telescope at Palomar Observatory for the first semester of 2023 should be submitted to the JPL Palomar Advisory Committee (JPAC) by

**5:00 PM California Time, Friday, 7 October, 2022**

This solicitation includes instructions for filling out the on-line cover sheet and submitting your Palomar proposal, as well as guidelines for proposal preparation and advice about time requests.

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For one-stop shopping and easy access to all the documents cited below, see our JPAC web site:

<http://palomar.ipac.caltech.edu>

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All proposals for JPL Palomar time must be submitted via our proposal web site:

<https://catcopy.ipac.caltech.edu/jpac/proposal.php>

To submit a proposal, you must fill in some basic information and attach your Caltech coversheet and your scientific justification, both in PDF format. You can find a link to the Caltech P200 coversheet here:

<http://sites.astro.caltech.edu/observatories/coo/solicit/2023A/C200.html>

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A list of available instruments and links to performance and operational information is available on the Palomar observers web site:

<http://sites.astro.caltech.edu/palomar/observer/P200observers.html#instruments>

Please review the procedures for the use of private and semi-private instruments on this site, if you are requesting to use such an instrument.

### ***PARVI and NESSI***

Two new spectroscopic instruments, PARVI and NESSI, will be available to the JPAC community on a shared-risk basis. Detailed information about each can be found on the JPAC web page

<http://palomar.ipac.caltech.edu>

under the "Proposal Call" tab.

### **PARVI:**

PARVI is a high spectral resolution, near infrared spectrometer presently being commissioned at Palomar.

Wavelength Range	1.1-1.8 $\mu\text{m}$
Spectral Resolution	$R \sim 90,100$ ( $1.65 \mu\text{m}/\lambda$ )
Angular Resolution ( $1.2\lambda/D$ )	$\sim 0.82 \times (\lambda/1.65 \mu\text{m})$ arcsec
Entrance Solid Angle (for extended sources)	$\sim 0.022 \times (\lambda/1.65 \mu\text{m})^2$ arcsec <sup>2</sup>
Fibers	Star, Sky, LFC, spare
Point Source Sensitivity (SNR/pixel)	>25 in 600 sec H=8 mag depending on seeing
Contact info: Gautam Vasisht ( <a href="mailto:gautam.vasisht@jpl.nasa.gov">gautam.vasisht@jpl.nasa.gov</a> ), Chas Beichman ( <a href="mailto:chas@ipac.caltech.edu">chas@ipac.caltech.edu</a> ), Dimitri Mawet ( <a href="mailto:dmawet@astro.caltech.edu">dmawet@astro.caltech.edu</a> ) and Rebecca Oppenheimer ( <a href="mailto:bro@amnh.org">bro@amnh.org</a> )	

Please contact Gautam Vasisht or Chas Beichman if you are considering a PARVI proposal.

### **NESSI:**

NESSI is a wide-field, multi-object J-H-K band spectrograph (using non-deviating grisms) which can also be used as a J, H, K or narrow-waveband, wide-field camera. The spectral resolving power is  $R=250$  in J-H-K, or  $R=1100$  in J, or H, or K. The spectrograph can be deployed in slit-less or long-slit mode and features a plate scale 0.22 arcsec/pixel. NESSI is currently undergoing commissioning and is available for shared-risk use. Rob Zelle at JPL is your POC for NESSI. Note that NESSI may not be available for general use in 2023A, but please contact Rob for more information if you are considering an urgent NESSI proposal.

**IMPORTANT:** For the past few years almost all observations from Palomar have been done remotely and all instruments can be operated in this manner. It is now possible, however, to observe from the mountain if you wish to do so. If your proposal is selected and you wish to request in-person observing, you will be asked to follow the procedures linked to item #1 at

<https://sites.astro.caltech.edu/palomar/observer/P200observers.html>

## **Further Instructions:**

Applications for JPL 200-inch time are accepted from all JPL/IPAC staff members. The PI is expected to be present at the telescope –or remotely -for the full duration of any time allocated. Postdocs may apply as PI, but the proposal must be accompanied by a letter from the JPL advisor describing the qualifications of the postdoc as a Palomar PI. This letter can be sent via email to Mike Werner ([mww@ipac.caltech.edu](mailto:mww@ipac.caltech.edu)), and it must arrive by the proposal deadline.

**JPL Engineering time:** A limited number of JPL engineering nights will be available to JPL scientists. No more than two nights will be awarded to any PI (or team). This time can be used to test new instruments or observing techniques on the Hale Telescope, but requires the agreement of the Observatory Director. If you wish to apply for this time, please contact Mike Werner ([mww@ipac.caltech.edu](mailto:mww@ipac.caltech.edu)) at least one week prior to the proposal deadline. A full proposal for this time must also be submitted on or before the deadline. In this proposal, the PI must make it clear that the request is for JPL engineering time, indicate what support might be required from the Palomar staff, and whether or not the engineering nights need to be scheduled contiguously with night(s) for which a science proposal is also submitted. You should also describe briefly the science which will be enabled by the engineering activities.

**Large Projects:** We encourage large-scale observing projects by individuals or teams that will use the facilities of the 200-inch telescope to attack problems that would be difficult to engage within the constraints of semi-annual allocations. Large Projects should require more than five nights of observing time per semester, or more than 10 nights of observing time per year. Accepted Large Projects will be allocated time for two semesters, with the possibility of renewal. A completed cover sheet and a comprehensive 1-page status report must be submitted during the open call for proposals for the second semester of an approved Large Project. Large Projects already allocated time in two semesters must be resubmitted if additional time is sought. In all cases a clear indication of the duration of the project must be given. Proposers of Large Projects must follow the same application process as other proposers, with the exception that an additional page of scientific justification (a total of up to 3-pages, maximum) may be used for Large Project proposals. Large Project proposals will be evaluated by the JPAC simultaneously with standard proposals. There is no a-priori allocation of time to Large Projects.

**Strategic Projects:** Several years ago, we initiated a program of strategic projects through which one could receive an award of observing time valid for four semesters with only progress reports required to renew the program for each semester. Criteria which define a strategic project are included as an Appendix to this Call. If you wish to apply for strategic project status for your work, please add an additional page to the proposal in which you explain the justification for strategic project status, and lay out and justify your time request for up to three additional semesters beyond 2023A. In addition, please add (strategic) in parenthesis to the proposal title on the cover sheet[s] where you present the title of the proposed investigation. The strategic request will be evaluated by the JPAC in parallel with the time request for 2023A. There is no a-priori allocation of time to Strategic Projects

**Newsletter:** Under the editorship of Lin Yan, COO has initiated an electronic newsletter to be made available several times per year containing information of interest to users of the 200-inch telescope. The issues published to date can be found at <http://sites.astro.caltech.edu/palomar/observer/newsletter.html> and present interesting information relevant to the 200-inch. The second issue, in particular, presents information about data

processing packages available for a number of the 200-inch instruments. The newsletters are also posted on the palomar.ipac site referenced above.

**User Support:** Within the JPL/IPAC community we have colleagues who are intimately familiar with the instruments available at Palomar. They will be able to help you with your proposal and/or data analysis if necessary. Please feel free to contact Mike Werner [mww@ipac.caltech.edu] who can refer you to the relevant user[s].

**Adaptive optics.** A highly capable adaptive optics system known as P3K is available at Palomar, most frequently used either with the PHARO camera and the PARVI spectrograph. P3K delivers diffraction-limited images with high strehl and H band and can also be used at J and K. The facility camera, PHARO, is a reliable "back end" for imaging observations with P3K. Further information is available from the Palomar Pinstrumentation page referred to earlier. Plans are in motion either to upgrade P3K to improve its reliability, or to replace it with a different system. Watch for a survey, separately distributed, which will ask about your interest in adaptive optics at Palomar and the types of observations you would propose to carry out. More information about P3K is available on the Palomar Instruments page cited earlier.

# PROPOSAL INSTRUCTIONS

## The Cover Sheet

All observers must fill out the Caltech on-line cover sheet. Fill out the form, save it in PDF format, and then upload this file, together with your science justification, via the JPL on-line proposal submission system website. The target list should be part of your scientific justification.

When filling out the Caltech coversheet, please take care to:

List the relative priority in case you submit more than one proposal.

Enter the number of nights requested in the appropriate column. Indicate your preferred run or runs with a "P", and acceptable runs with an "A", regardless of type (light or dark). For maximum flexibility in scheduling, it is important to know all the times you can observe. <sup>1</sup>

Fill in the instrument you wish to use. An up to date listing of all 200-inch instrumentation is available at <http://sites.astro.caltech.edu/palomar/observer/P200observers.html#instruments>. If you are proposing to use a private or semi-private instrument please follow the guidelines to be found at this site. Please include in the discussion, if called for, a confirmation that appropriate arrangements have been made for use of that instrument. If you use "Own Equipment", identify the instrument in the proposal abstract.

If you wish to use more than one instrument in the course of the project, use a separate line for each instrument. At the 200-inch telescope, you may request instruments to be installed simultaneously at the prime focus and the Cassegrain focus but you must fully justify the request in your proposal. Secondary instruments should be requested *only* if they are *integral* to the program and if there is a *very high probability* that they will be used during the observing run.

Check the box provided if scheduling constraints apply to the request. Give the specifics in the proposal abstract and in the body of the proposal. **Following this instruction is particularly important now that more and more programs are requesting specific nights in order to study exoplanet transits and eclipses. You should be filling out a separate form detailing your timing requirements [see below].**

Observers may request full or half nights for Hale/P200. Observers should be advised that it may not always be possible to schedule partial night allocations.

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<sup>1</sup>The system of P's and A's to designate preferred and acceptable runs (respectively), intended to take the guess-work out of scheduling, rests on two conditions: First, observers need to be as generous as possible in designating acceptable runs, since overly-constrictive selections make scheduling difficult and, in extreme cases, may even preclude the assignment of observing time to the project. A good approach would be to tag any observing run as Acceptable if the data can be obtained during that period. Second, the scheduler will not assign observing time in a run that has not been tagged by the observer with a P or an A. Should circumstances obtain that such assignment might be needed, the scheduler will discuss the situation with the observer before any exception to the rule is applied. Putting all the P's and A's on a single line means you want the time scheduled in a single block, if possible. If you want the time distributed into two or more blocks, use a separate line for each block

**Remote Observing:** DBSP, WASP, WIRC, CHIMERA, P3K/PHARO, NESSI, TripleSpec, and CWI [in some circumstances] may be operated by remote observing, eliminating the need for and cost of travel to Palomar. **For more information about remote observing see:**

<http://sites.astro.caltech.edu/observatories/coo/rof/ROF.html>

COO requires a one-month in advance request for remote observing at the 200-inch. We encourage JPL usage of this capability because it compensates for lack of travel funding to use the telescope. The web form for submitting a remote observing request is here

<https://sites.astro.caltech.edu/observatories/coo/rof/ROF.html>

### **Scientific Justification, Target List and Summary of Previous Allocations**

The scientific justification should include:

**A short description of the project (2 pages maximum, 3 pages maximum for Large or Strategic Projects)**, including your science goals, methodology, and the appropriateness of the Palomar 200-inch telescope. If this is an ongoing project, describe what has been done. If the project will require time beyond the current semester, describe how much observing time will be needed to complete the work, or request strategic project status if appropriate. Remember to **give the big picture** (e.g., the total scope of the project, what will be done at Palomar vs. what will be done with other facilities, who will do the work, etc.). Remember, not all members of the TAC will be experts in your field, so make sure you explain the significance of your research to a broader audience.

- A detailed **estimate of the time required** for the observations. No standard format can be specified for this, as it will vary from program to program. Obvious factors to take into account are the brightness of your objects, the signal-to-noise ratio required, instrumental characteristics, potential systematic errors and how you will deal with them, and assumptions about sky brightness (i.e., phase of the moon). Be as specific as you can.
- Up to **two pages** of figures, tables, and references supplementary to the written discussion. We strongly prefer \*legible\* figures which can be read by the JPAC and used to publicize the results of our work at Palomar.
- **A list of objects to be observed**, including name, coordinates, and approximate magnitude (specify band). In case objects will be selected from large samples, it is not necessary to list all the objects; however, make sure that in the text discussion the sample and its size are well-defined, and the selection criteria and the number of objects to be observed are specified clearly.
- Any **scheduling constraints** that may apply. If you are proposing observations which must be scheduled at specific times [e.g. occultations, transits, critical phase coverage of a binary, etc.], check the Date-Specific box on the proposal cover sheet and justify the date specified. For the 200-inch,

download the Date-Specific supplement to the proposal cover sheet <http://sites.astro.caltech.edu/observatories/coo/solicit/2023A/DS.html>, fill in the required information and include it in your proposal as an addendum to the cover sheet. If there are dates when you cannot observe, or if the observation must be made within a window of a couple of days, again check the Date-Specific box and explain and justify the need for the specificity in the proposal. The growing interest in exoplanet studies, including transits and eclipses, means that we may get conflicting date specific requests, so be sure to include several instances of a given phenomenon if more than one opportunity will occur in 2023A.

On a separate page, if needed, please describe the **status** of 200-inch observing time allocated to you over the past two years, and provide an updated list of publications – including conference proceedings, abstracts, and submitted papers – from 2020 to date based solely or in part on your Palomar observations. *We expect that P200 observers will publish their results in a timely fashion, as data in a desk drawer is no use to anybody.* **It is particularly important that you provide this publication information, not only in support of your proposal, but in support of JPL’s investment in the 200-inch.**

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### **Shared-Risk Observing**

Shared Risk Observing is a transitional phase between the final engineering tests of a new instrument and its use for general observing. This scheduling plan has the twofold goals of (a) allowing researchers to use the instrument to acquire scientific data for their programs and (b) allowing the instrument builders to check its performance in an operational environment. Observers using an instrument on a *Shared Risk* basis do so with the understanding that the builders may be present during the run and may need to:

- interrupt the science observing to adjust or modify the instrument,
- perform on-sky test measurements,
- obtain copies of the observer’s data to evaluate its performance.

### **Acknowledgement**

We request the following acknowledgement to appear in any publication based wholly, or in part, on observations obtained at the Hale Telescope: “Based on observations obtained at the Hale Telescope, Palomar Observatory as part of a continuing collaboration between the California Institute of Technology, NASA/JPL, Yale University, and the National Astronomical Observatories of China.”

### **APPENDIX A Characteristics of strategic projects:**

For present purposes, a strategic project is one that furthers the programmatic and strategic objectives of JPL/IPAC and has larger goals that go beyond the science of the program. A strategic project need not be one that utilizes a large amount of observing time. Examples of strategic projects include [but are not limited to]: Exoplanet observations supporting our utilization of JWST and/or CGI and other exoplanet missions; checkout/demonstration of a particularly promising technology or a new instrument (which need not have been developed under the Palomar instrumentation fund); feasibility demonstrations through trial observations of a concept for a space mission; observations that support a planned or operating mission by observations of a solar system target, by following up on new results, or by selecting targets for study. The intent of this program is to assure access to the 200-inch for up to two years, so that the program can be planned and executed efficiently and with some guarantee of success.