

## TARGET OF OPPORTUNITY

Target of opportunity (ToO) observations can now be triggered on all classically scheduled programs at Keck. Further information is provided here:

[https://www2.keck.hawaii.edu/inst/common/too\\_policies.html](https://www2.keck.hawaii.edu/inst/common/too_policies.html)

Target of Opportunity (ToO) proposals are directed at objects with unpredictable appearance dates for which a short, timely observation (up to one hour) may be of great value. ToO programs are not intended for observations that can be anticipated in advance (e.g., Cadence observations).

### Proposing for Partnership ToOs

This policy is based on the existing UC ToO policy. Swinburne, Caltech, NASA, UC or UH researchers can propose to their respective TACs for cross-institutional ToO (“Partnership ToO”) observations on Keck 1 and/or Keck 2. TACs should award Partnership ToOs only for highly ranked programs. These programs may interrupt programs assigned to any institution, including programs with partial-night allocations. 2) Each TAC will judge their respective community’s proposals. Swinburne can allocate up to 2 triggers for Partnership ToO observations per semester. NASA and UH TAC’s can allocate up to six triggers for Partnership ToO observations per semester. CIT and UC TAC’s can allocate up to seven triggers for Partnership ToO observations per semester. The duration of each trigger shall not exceed one hour. Each TAC will submit a list of approved Partnership ToOs as well as their full proposals to WMKO as part of the routine reporting of successful proposals.

Individual TACs may designate a few nights (partial or whole) as exempt from ToO interrupts. This designation must be scientifically motivated, namely that such interruptions would seriously compromise the scientific return of the entire observing time. Proposers should make any such requests to their individual TACs as part of their observing proposal. Use of these exemptions is expected to be rare. Nights should be designated as “uninterruptible” by the institution’s scheduler during the semester scheduling process, via the scheduling tool.

The standard application form will be used for ToO proposals. Proposers should include all relevant information in the Technical Justification Section, which not only includes a demonstration of observing feasibility within the 1 to 2 hours blocks, but they must also include all possible instruments that would work for your observations, triggering criteria, probability of triggering etc. ToO proposals will be ranked against other non-ToO proposals within that round. The STACK will assess the relative ranking with the other proposals, accounting for the factor of 2x hourly rate charge for ToO observations.

### Scheduling Partnership ToOs

ToOs may be scheduled at any future time in the semester in which they were awarded. In order to initiate a ToO, observers must log in to the WMKO Observer Home Page and then use the ToO GUI to select a specific night, time, instrument configuration, and coordinates for their ToO. Both Partnership and Institutional ToOs shall be scheduled through this interface. The WMKO web interface will be the

sole source for managing the triggers, i.e., no arrangements via phone calls or emails to the classically scheduled observer (a.k.a. the “Observing PI” hereinafter). b) Any ToO program that requires LGSAO must be invoked and the target coordinates submitted prior to 3:00 pm HST on the day of the observing run. ToO programs that require LGSAO can only be invoked on regularly scheduled LGSAO nights.

ToOs are expended when they are scheduled, not when they are executed. Teams will not recover ToOs if the observation is cancelled or unsuccessful for any reason (e.g., weather or instrument fault). d) The public interface of the ToO GUI shall indicate the time, instrument, telescope, instrument configuration, and ToO PI of any scheduled partnership interruptions. Once a ToO is scheduled, the contact information for the Observing PI and the ToO PI(s) will be shared with each other, to facilitate coordination of the observing.

Partnership ToOs are limited to two per telescope per night. A single partner may not use two Partnership ToOs on the same telescope in one night, but they may use two Partnership ToOs to interrupt both telescopes on the same night.

For each ToO interrupt, the maximum duration is 1 hour of elapsed time (i.e., wall clock). This includes calibration and restoring the instrument mode to its state prior to the ToO interrupt or to another state as mutually agreed with the Observing PI.

The Observing PI will make best efforts to promptly turn over the telescope to the ToO PI at the scheduled ToO time. The observer may briefly delay handover of the telescope in order to complete their current exposure or essential observing sequence (e.g., one AB nod pair). After that, it is expected the Observing PI will yield the telescope to the ToO PI, unless the latter agrees to wait longer.

ToO instrument changes will be allowed on a limited basis starting in the 2019A observing semester. Only instruments with “Ready” status as indicated on the ToO GUI via the observer login page and instruments designated in TAC-approved programs can be selected.

It is the responsibility of the ToO team to carry out the observations. The ToO team may carry out the observations themselves. If remote observing, the team is responsible for making appropriate arrangements with the Remote Observing Room, including reservations and testing in advance. Alternatively, the ToO team may ask the Observing PI to carry out the observations, which will include an offer of co-authorship. The Observing PI is not obligated to do the observing.

Upon completion of the ToO, the ToO PI shall use the Keck web system to submit a brief summary of the execution of the ToO. Time Accounting and Proprietary Period for Partnership ToOs

At the conclusion of each semester, WMKO will report to each partner the time used, the associated ToO programs, and the interrupted Observing PIs.

Time imbalances between partners arising from Partnership ToOs will be corrected through each partner's semester time allocations and/or WMKO's giveback science time. Because ToOs are likely triggered in suitably good weather, their time usage will be charged at a rate of twice the normal observing time, i.e., 2 hours. The compensated time will be awarded to the interrupted PI, or the responsible staff member in the case of a postdoc PI who is no longer employed by Swinburne. Shortly after a ToO occurs the interrupted PI must email the TS a brief (1 paragraph) summary containing the following: 1. Time lost (proposal ID, duration, instrument, object position, lunation), 2. Flexible plan for compensation time (duration, instrument, object position, lunation). The information will be provided to WMKO and Caltech for scheduling.