

LBT Time Domain Observation Policy

2019 February 12

Prepared by the SAC in response to Board Action Item 2018.10.09 (Revised ToO policy):

Charge: Prepare a policy document concerning the implementation of Time Domain Observations, as articulated in the SAC recommendations document 11_BrdMtg 1810.SAC_Recommendations_TDO_Policy and in the Board Motion 2018.10.04.

1 Summary

The SAC Study Report of 2018 Sept 10, *LBT Time Domain Observations*, examined how the Time Domain Observations (TDOs) could be executed across partner observing blocks. In response to this report the LBT Board of Directors at their October 2018 meeting directed the SAC to develop a policy to implement cross-partner TDOs. This document describes the LBT Time Domain Observation Policy that applies to cross-partner TDOs.

The genesis, scientific benefits, and other rationales for the development of this policy may be found in SAC document *11_BrdMtg1810.SAC_Recommendations_TDO_Policy* of 2018 September 10.

This policy applies to only to cross-partner TDOs. Individual LBTO partners have established policies and procedures for the execution of TDOs by their partner members *within* their allocated partner blocks, and this policy does not apply to such intra-partner TDOs.

2 Definitions

2.1 Cross-Partner TDO

A Cross-Partner TDO is when a TDO program proposed by investigators from LBT Partner A is allowed to be executed during an observing block allocated to LBT Partner B.

This is distinct from a TDO program that is intended to be executed only during the proposing partner's own observing block (a "classically-scheduled TDO").

2.2 Scheduled TDOs

These are cross-partner TDOs that can be scheduled in advance (e.g., long-term monitoring of events unfolding over timescales longer than a typical partner block). This class of TDOs is non-disruptive in the sense they do not require a real-time trigger and can be included in the advanced observing planning for an observing block.

2.3 Semi-Disruptive TDOs

These are cross-partner TDOs triggered in "real time" during an observing block that can be executed either as soon as any on-going observation in-progress at the time of the trigger is completed or on the next clear night. These are "semi-disruptive" in the sense that while on-going observations are not aborted in response to the trigger, the night's observing plan needs to be changed to interpolate the TDO triggered observation.

2.4 Disruptive (aka Rapid Response) TDOs

This is a TDO executed in response to an external trigger (e.g., a GRB detected by a satellite) that requires an *immediate* start of observations because the event evolves rapidly in time. These TDOs are disruptive in that they require the on-site observers to abort any observations in progress at the

time of the trigger and begin execution of the TDO observation scripts. Such TDOs may also require an instrument change to execute, incurring additional execution-time costs.

2.5 Protected Programs

A protected program is an observing program that must not be interrupted by a cross-partner TDO once execution is started. Examples include high-priority, long-look observations (e.g., faint-object spectroscopy requiring many hours of integration), time-series observations for which the start is not time-critical the desired time-series must be completed once started, and time-critical observations with a particular observing window known in advance (e.g., an exoplanet transit visibility window).

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3.1 Fraction of Time Available for Cross-Partner TDOs

Cross-partner TDOs shall not constitute more than 5% of the available observing time during any given partner block.

For example, following the standard 10-hour night reckoning, during a 5-night block $0.05 \times 10 \text{ hours/night} \times 5 \text{ nights} = 2.5 \text{ hours}$ will be available to execute cross-partner TDOs.

3.2 Intra-Partner TDOs

TDOs triggered by a partner during their own observing blocks are not subject to these rules.

3.3 Cross-Partner TDO Proposals

A PI who expects to trigger a TDO across partner blocks during an upcoming semester shall submit a proposal to the partner TAC to which he/she has access, the same as for regular observing programs. At the beginning of each semester, the partner coordinators communicate their lists of potential Cross-Partner TDO programs to the LBT director.

3.4 Partner Opt-Out

Partners may disallow the execution of cross-partner TDOs during their allocated time, either by defining protected observing times (aka “blackout dates”) that may range up to 100% of their allocated time during a given block, or by designating certain programs as protected against interruption as defined in section 2.5.

Requests for opt-out must be included as part of the partner programs submitted to the LBTO Director for scheduling before each semester.

3.5 Cross-Partner TDO Scheduling & Notification

Cross-Partner TDO opportunities shall be scheduled by the Observatory Director and noted on the published semester schedule with an appropriate flag.

A full list of potential cross-partner TDOs shall be made available ahead of a semester to the partner coordinators, including a description of potential observing modes and triggering requirements.

As part of preparation for a partner observing run, LBTO support astronomer(s) for the run shall communicate any potential cross-partner TDOs to the observers for the upcoming run.

PIs for approved cross-partner TDOs will provide all necessary observing scripts, including celestial coordinates and finder charts if known or suitable placeholders if unknown, in advance of the start of the semester in which the TDO is scheduled. LBTO support astronomers will work with the PI to

ensure that the scripts are free of errors and available on the mountain in a standard computer folder accessible by all partner observers. The scripts must be accompanied by a text file with instructions for how to execute the observations, including an estimate of the total expected execution time.

3.6 Triggering a Cross-Partner TDO

Only PIs with approved TDO programs may trigger TDOs.

When the PI triggers their approved TDO, the LBTO director, or a person delegated by the director (e.g., the support astronomer for that partner block) accepts or rejects the trigger in real-time and communicates it to the partner lead observer and the telescope operator along with the rules for execution.

Once a TDO trigger is accepted for execution, observing instructions, coordinates, and finding charts will be communicated to the observer at the telescope who will carry out the observations with the assistance of the scheduled observatory support astronomer if needed.

3.7 Cross-Partner TDO Time Compensation

When a cross-partner TDO is executed during another partner's observing block, that partner will be compensated at rate of 3 times the actual execution time (integration plus overheads), regardless of whether the TDO is successfully observed or not (e.g., if the TDO is triggered and 30 minutes into a 2h observation clouds stop observing, the time is still compensated).

If multiple partners collaborate on a joint cross-partner TDO program, the costs shall be prorated among the partners, with proportions agreed upon in advance by the LBTO Director and the proposing partner coordinators.

Rebalancing of partner time to account for cross-partner TDO charges shall be done on a yearly basis.

3.8 Data Ownership

Data acquired by cross-partner TDOs are owned by the PI who triggered the TDO as defined in the observing scripts, including the provision for joint ownership in the case of cross-partner collaborations on the TDO program.

3.9 Proprietary Period

Data acquired for cross-partner TDO observations are subject to the same proprietary period rules as regular observing programs.

3.10 Impact on Telescope Utilization

LBTO shall keep track of the number of requested, triggered, and executed cross-partner TDOs and the number of protected programs for purposes of assessing the impact of cross-partner TDO programs on telescope utilization for the annual observatory report.

3.11 Adjudication of Disputes

Disputes regarding cross-partner TDOs will be adjudicated by the LBTO Director.