

An APT checkbox for long-term variability.

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Summary: In contrast to time-domain investigations of astrophysical transients, which require rapid response, time-domain studies of long-term variability require long campaign durations and specific observational cadences. An APT checkbox for GO proposals could help establish programs with the required temporal characteristics.

The UV Initiative checkbox: An APT checkbox for UV observations has been used to identify programs that make effective use of HST's UV strengths. This checkbox also helps proposers to direct their focus toward observations aligned with HST's UV capabilities. An APT checkbox for long-term variability would similarly emphasize the advantages of HST's 30-year legacy and JWST's prospect of a 20-year lifetime.

The UV initiative checkbox comes with some general eligibility criteria: The proposal must use the UV capabilities of Hubble at wavelengths ≤ 220 nm, and the UV observations must be essential to the proposed science investigation. Clear criteria should also be given for the long-term variability checkbox.

Criteria for the long-term variability checkbox: Observations of spectroscopic, astrometric, and/or photometric variability should be essential to a science investigation responsive to the long-term variability initiative.

The "long-term" aspect of a program should also be specifically addressed. The current 3-cycle duration for new long-term GO programs provides a good balance between enabling the investigation of phenomena over multi-year timescales, and maintaining opportunities for new GO programs. Within these existing limits, a long-term program should clearly define a proposed observational cadence and campaign duration, with a clear scientific justification for the temporal requirements. The fundamental science timescales should extend beyond a single HST/JWST observing cycle, but depending on the required cadence, observations may not necessarily be required to span more than one cycle.

Campaigns longer than 3 cycles: It would be nice for long-term variability studies to be able to extend longer than the 3-cycle limit currently in place for long-term GO programs. But a more generous limit would raise concerns that time resources would be pre-

allocated to the extent that there are fewer resources available for new programs.

An additional review of the program after 3 observing cycles could be used to assess the program's science impact and justify continuation. The most effective mechanism would be a separate review from the main TAC (which reviews anonymous new proposals). The separate review for continuation of long-term variability programs would benefit from non-anonymous input from the original team, essentially a Phase III proposal.

In order to minimize the impact of multi-cycle extended long-term programs on the observatories' thriving GO programs, some mitigating steps could be considered, for example:

- Data in the continuation program (beyond 3 cycles) would have zero proprietary period
- Review of the continuation programs each cycle would assess the demonstrated science return from the initial GO program along with the proposed return from continuation
- Continuation programs would draw from a pool of DD time supporting long-term variability studies, rather than the main GO pool