

Joint HST-TESS Observing Proposals

The goal of this joint program is to provide the opportunity for HST proposers to be awarded “short cadence” target slots from the Transiting Exoplanet Survey Satellite (TESS) mission. During its primary mission, TESS stares at one part of the sky for a duration of ~27 days and yields full-frame image data covering a 24 x 96 degree field of view with a long 30-minute cadence and also downlinks postage stamps of a select number of targets at a short 2-minute cadence. The observations are collected in a single broadband red-optical bandpass. TESS then steps to a different part of the sky to stare for another ~27 days, and so on, until it observes a complete hemisphere over 1 year. It is currently observing in the southern ecliptic hemisphere and will flip to the northern hemisphere in its second year of its prime mission. The extended mission is anticipated to have a similar observing strategy. The TESS data have no proprietary period and are hosted at MAST.

The joint HST-TESS program would allocate up to 100 targets for TESS to observe at 2-minute cadence during the primary TESS mission and in the future, for the extended TESS mission. More rapid cadence modes (e.g., 20-second cadence) are anticipated to be implemented in the extended TESS mission. Proposers to the joint HST-TESS call should justify that 2-minute cadence is sufficient to achieve their science goals, since shorter cadences have not yet been approved or implemented. The multi-wavelength observations must be demonstrated to be critical for the science goals of the joint HST-TESS proposal. The project does not need to require simultaneous observations with HST and TESS. Proposers to the HST-TESS joint program can also submit similar proposals via the TESS Guest Investigator (GI) program, however, no HST orbits will be awarded by the TESS GI program. They may be awarded funding from both the HST program and the TESS GI program, where the HST funding would nominally support analysis of HST data and the TESS GI funding would support analysis of the TESS data. If proposers are awarded HST funding but not TESS funding, they are encouraged to apply for funding through ADAP for the analysis of archival TESS data.

TESS GI Cycle 2 will take place from approximately July 2019 to July 2020, during the second year of the primary mission. This will overlap with HST Cycle 27, which will take place from October 1, 2019 to September 30, 2020. TESS GI Cycle 3 will take place during the extended mission, which is anticipated to begin approximately around August 2020, and also overlapping with HST Cycle 27. Since the strategy of the extended mission is unknown at this time, for HST Cycle 27 we would request that proposers only submit joint HST-TESS proposals for targets in TESS GI Cycle 2 (*the caveat being once we know what the extended mission consists of proposers could possibly apply for HST Mid-Cycle 27 time for targets in TESS GI Cycle 3).

Potential Relevant Science Cases (in no particular order)

Exoplanet host star characterization

Exoplanet atmosphere characterization

Stellar flare energies/rates

AGN/accreting objects variability

Supernovae science

Microlensing science

Solar System science (asteroids, comets, KBOs)