

Charter for the Exoplanet Exploration Program Analysis Group (ExoPAG) Study Analysis Group (SAG) 17: Community Resources Needed for K2 and TESS Planetary Candidate Confirmation

K2, operating since 2013 and expected to continue operations through 2017, is producing hundreds of candidate planets (approximately 50 – 100 per field). Additionally, TESS, when launched in 2017, will produce thousands of candidates from the selected TESS targets, and potentially hundreds of thousands of candidates from the full-frame images. In order to confirm these candidates, follow-up observations, from either the ground or space, are required. Spectroscopy is needed for stellar characterization; radial velocity observations are needed to determine companion masses, and imaging (both seeing-limited and high-resolution) is needed to ascertain the target blending and hence determine accurate planetary radii and possible false positives. Some amount of triage work can also be done by time-series photometric follow-up with higher angular resolution.

SAG 17 will study and enumerate the resources needed by the community to effectively and efficiently validate as many K2 and TESS candidates as possible, and propose methods to allow the community to coordinate and self-organize the process. This SAG is geared more towards the validation efforts needed rather than the characterization of the systems, but the two efforts are related, and as such, This SAG is complementary to previous and ongoing SAGs (8: RV; 10: Atmospheres; 12: Astrometry; 14: TESS Stars; 15: Directing Imaging Science; 16: Biosignatures). Finally, the purpose of this SAG is not to define what is needed by the TESS project to satisfy their level 1 science requirements, but rather what is needed by the community to validate and study the bounty of the full range of planetary candidates being discovered by K2 and will be discovered by TESS.

The following are specific goals of SAG 17:

- Identify needed follow-up observations for K2 and TESS including but not limited to imaging, spectroscopy, and time-series follow-up
- Identify telescopes, instrument, and financial resources available to the US community
- Identify how archival resources can be utilized (e.g., Gaia)
- Identify how the community can be organized and communication facilitated particularly with regards TESS full frame images, candidate identification, single transiting events, and candidate prioritization.
- Identify needs to ensure efficient and effective characterization with JWST (and WFIRST)
- Identify connections to other SAG efforts (e.g., SAGs 15 and 16)
- Identify synergies of resources with non-exoplanet science