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Title: Transiting Exoplanet Survey Satellite (TESS)
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Abstract: The Transiting Exoplanet Survey Satellite (TESS) will discover thousands of exoplanets in orbit around the brightest stars in the sky. In a two-year survey of the solar neighborhood, TESS will monitor more than 500,000 stars for temporary drops in brightness caused by planetary transits. This first-ever spaceborne all-sky transit survey will identify planets ranging from Earth-sized to gas giants, around a wide range of stellar types and orbital distances.

TESS stars will typically be 30-100 times brighter than those surveyed by the Kepler satellite; thus,TESS planets will be far easier to characterize with follow-up observations. For the first time it will be possible to study the masses, sizes, densities, orbits, and atmospheres of a large cohort of small planets, including a sample of rocky worlds in the habitable zones of their host stars. All of the half-million plus TESS targets will be observed at a rapid cadence (1 minute or less). Hence, the brighter TESS stars will potentially yield valuable asteroseismic information. TESS will provide prime exoplanet targets for characterization with the James Webb Space Telescope (JWST), as well as other large ground-based and space-based telescopes of the future.

TESS will serve as the “People’s Telescope,” with data releases every 4 months, inviting immediate community-wide efforts to study the new planets. The TESS legacy will be a catalog of the nearest and brightest main-sequence stars hosting transiting exoplanets, which will endure as the most favorable targets for detailed future investigations.

TESS has been selected by NASA for launch in 2017 as an Astrophysics Explorer mission.