Contribution ID: **34** Type: **Invited talk**

A Galactic Exoplanet Census with the Roman Space Telescope (Invited)

Tuesday, December 16, 2025 4:10 PM (30 minutes)

NASA's Nancy Grace Roman Space Telescope —launching in late 2026 —will open up unprecedented discovery space in the infrared universe. Combining Hubble-like sensitivity and resolution with a field of view 100 times larger and a sky-mapping speed 1,000 times faster, Roman will conduct panoramic, high-resolution surveys that will transform our understanding of dark energy, exoplanetary systems, galactic structure, the solar system, and star formation —all while producing an enormous data set that will be analyzed for decades to come. One of Roman's Core Community Surveys is the Roman Galactic Bulge Time Domain Survey (RGBTDS), an ambitious program that will monitor 1.7 square degrees toward the crowded Galactic center with unprecedented precision and cadence. Over 440 days across six observing seasons, Roman will repeatedly image the same stars every 12 minutes, enabling the detection of planetary systems by using microlensing to reveal thousands of cold planets and elusive free-floating worlds, and transits to discover tens of thousands of hot and warm planets, including Earth-sized and larger worlds orbiting their stars. Together, these observations will deliver the first comprehensive galactic census of exoplanets —spanning all major stellar populations and probing planets with radii or masses above ˜2× Earth's at all separations, from hot Jupiters to icy wanderers beyond the snow line. I will highlight Roman's revolutionary capabilities, preview its expected scientific yield, and describe the efforts of the Roman Galactic Exoplanet Survey Project Infrastructure Team (RGES-PIT), which is developing the framework, tools, and strategies to maximize the scientific return from the RGBTDS.

Primary author: GAUDI, Scott (The Ohio State University)

Presenter: GAUDI, Scott (The Ohio State University)

Session Classification: Microlensing

Track Classification: In-person