

As the Executive Committee of the NASA Exoplanet Analysis Group, we write to express our unanimous support for the James Webb Space Telescope.

The detection of hundreds of extrasolar planets has changed the perspective of the human race from one in which our planet might have been unique to one in which we know other planetary systems are common and diverse. We should now move from a phase of *inventory* – discovering extrasolar planets – to one of *characterization* – determining the properties and composition of individual planets.

JWST will be the most powerful new facility in this era, with unique capabilities:

- Direct imaging: with its large aperture and infrared sensitivity at wavelengths inaccessible from the ground, JWST can directly detect infrared radiation from many types of Jupiter-like planets orbiting nearby stars undetectable by other techniques or instruments.
- Direct characterization: these directly-detected planets can then be characterized by JWST instruments to measure their atmospheric composition and provide insights into their formation.
- Implementing advanced coronagraphy in space with JWST provides a crucial step on the path to a future direct imaging mission for habitable exoplanets
- Pre-planetary disks: direct imaging of scattered and emitted infrared light from pre-planetary disks will allow JWST to trace the process of planet formation.
- Transit spectroscopy: just as the Spitzer and Hubble telescopes can characterize the light from giant transiting planets, JWST can spectroscopically characterize smaller planets – “super-earths”, ocean worlds, and other types as yet unknown.
- Characterizing a habitable world: under favorable circumstances, JWST could measure the atmospheric properties of a transiting Earth-class world in the habitable zone of a nearby, bright, low-mass star. The signature from such a planet would be extremely weak, but within the reach of JWST.

JWST will be NASA’s key mission for exoplanet science, after the eras of HST, Spitzer, and Kepler. JWST will maintain the progress of the past decade, and preserve US leadership in this field.