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Overview of the Nancy Grace Roman Space Telescope Coronagraph Instrument and Its Technology Demonstration

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After JWST, NASA's next flagship astrophysics mission is the ambitious Nancy Grace Roman Space Telescope. Roman will include the Coronagraph Instrument (CGI) will be the first high-performance stellar coronagraph using active wavefront control for deep starlight suppression in space, providing unprecedented levels of contrast, spatial resolution, and sensitivity for astronomical observations in the optical. During its Technology Demonstration phase, CGI will resolve the signal of an exoplanet via photometry and spectroscopy and directly image and measure the polarization of disks. Future flagship mission concepts (e.g., HabEx and LUVOIR) aim to characterize Earth analogues with visible light flux ratios of $\sim 10^{-10}$, and CGI is a critical intermediate step toward that goal, with predicted capability of $\sim 10^{-9}$. Here, we present CGI's design and capability as well as some anticipated results from its technology demonstration.