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Abstract:

The James Webb Space Telescope (JWST) is a large aperture (6.5 meter), cryogenic space telescope with a suite of near and mid-infrared instruments covering the wavelength range of 0.6 μm to 28 μm . JWST's primary science goal is to detect and characterize the first galaxies. It will also study the assembly of galaxies, stellar and planetary system formation, and the formation and evolution of planetary systems. We will review the design of JWST, and discuss the current status of the project, with emphasis on recent progress in the construction of the observatory. We also review the capabilities of the observatory for observations of exosolar planets and debris disks by means of coronagraphic imaging, and high contrast imaging and spectroscopy. This discussion will focus on the optical and thermal performance of the observatory, and will include the current predictions for the performance of the observatory, with special reference to the demands of exoplanet science observations.