

Overview of the James Webb Space Telescope Observatory Dr. Mark Clampin (GSFC)

The James Webb Space Telescope (JWST) is a cryogenic, 6.5 meter diameter space telescope. JWST has a unique architecture, compared to previous space telescopes, that is driven by its science requirements, a passively cooled cryogenic design, and the need to stow the observatory for launch. JWST's large, segmented mirror meets the requirement for high angular resolution in the infrared coupled with a significant increase in collecting area compared to the Spitzer and Hubble Space telescopes in order to detect the first galaxies. JWST's unique five-layer sunshield allows the telescope and instrument module to passively cool to cryogenic temperatures. JWST will be launched on an Ariane 5, and so both its telescope optics, and the sunshield have to be stowed in order to fit the Ariane 5 fairing. Following launch the sunshield and telescope optics must be deployed, and the primary mirror phased for science operations. In this presentation we will review the design of the observatory and highlight recent progress in the construction of the JWST observatory. In particular, we address recent progress with the telescope optics, sunshield and spacecraft. We will discuss predicted observatory performance in terms of the scientific goals of JWST and address key operational considerations that might bear upon frontier science observations.