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The James Webb Space Telescope (JWST) will be a large infrared telescope with a 6.5-meter multi-element primary mirror. The telescope will be launched on an Ariane 5 rocket from French Guiana in October of 2018.

It will study every phase in the history of our Universe, ranging from the first luminous glows after the Big Bang, to the formation of solar systems capable of supporting life on planets like Earth, to the evolution of our own Solar System.

JWST is an international collaboration between NASA, the European Space Agency (ESA), and the Canadian Space Agency (CSA). The NASA Goddard Space Flight Center is managing the development effort. The main industrial partner is Northrop Grumman; the Space Telescope Science Institute will operate JWST after launch.

Several innovative technologies have been developed for JWST. These include a primary mirror made of 18 separate segments that unfold and adjust to shape after launch. The mirrors are made of ultra-lightweight beryllium. The graphite-composite structure that supports the mirrors is designed to keep the surface of the primary mirror stable during small excursions at cryogenic temperatures. JWST's biggest feature is a tennis court sized five-layer sunshield that attenuates heat from the Sun more than a million times. The telescope's four instruments - cameras and spectrometers - have detectors that are able to record extremely faint signals.

One instrument (NIRSpec) has programmable microshutters, which enable observation up to 100 objects simultaneously. JWST also has a cryocooler for cooling the mid-infrared detectors of another instrument (MIRI) to a very cold 7 K so they can work.

Today's talk will focus on the beryllium mirror segments & the graphite-composite metering structure.

https://www.cfa.harvard.edu/news/2009/pz200905.html