Studies of Supernovae, SNRs, and Dust with the James Webb Space Telescope

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The James Webb Space Telescope (JWST) will provide breakthrough capabilities for the study of supernovae and supernova remnants, as well as many other science objectives. JWST is a large aperture, cryogenic, infrared-optimized general purpose space observatory under construction by NASA, ESA, and CSA for launch in 2018. The JWST instrumentation will provide imaging, coronagraphy, and spectroscopy between 6000A to 29 microns. This spectral region contains many atomic, molecular, and particulate diagnostics that are especially relevant for the study of dust formation. The spectroscopic capabilities include velocity resolution down to ~100 km/sec, a near-IR multi-object spectrograph with a ~3X3 arcmin field of view array of ~250,000 addressable shutters, and near-IR and mid-IR ~3x3 arcsec integral field units. The JWST telescope will have a 6.5m-diameter segmented primary mirror and will be diffraction-limited at 2 microns (PSF FWHM ~ 0.07 arcsec). The imaging and spectroscopic sensitivities will be about 100X lower than previous capabilities in the near- and mid-IR. The JWST observatory will be placed in a L2 orbit by an Ariane 5 launch vehicle provided by ESA. The JWST telescope and instruments will be passively cooled to ~40K by a sunshield that will be unfolded after launch. The sunshield geometry limits the JWST pointing on the sky to be between 85 deg and 135 deg from the Sun. The observatory is designed for a 5-year prime science mission, with consumables for 10 years of science operations, and a Target of Opportunity response time of 48 hours.

On the Web: http://www.jwst.nasa.gov
http://www.stsci.edu/jwst

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