

# Canada Will Contribute To the JWST: Next-Generation NASA Telescope

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Canada will build a **key component of the gigantic James Webb Space Telescope (JWST) to be launched by [NASA](#) in August 2011.** The Canadian Space Agency (CSA) recently awarded a **\$5-million contract** to Ottawa-based EMS Technologies' Space and Technology Group for the design of the fine guidance sensor, in partnership with COM DEV of Cambridge, Ontario. Northrup Grumman Space Technologies of Los Angeles, California, will build the JWST under NASA supervision at an estimated cost of US\$1.5 billion.

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"This major new observatory will take over where Hubble, Spitzer, and other space telescopes leave off," said Dr. Virendra Jha, CSA Vice-President of Science, Technologies and Programs. "It is being designed by teams in Canada, the U.S., and Europe. JWST will open new windows on the first stars and quasars in the early universe, as well as star and planet formation in nearby galaxies. JWST is uniquely designed for these investigations."

"Our instrument, the fine guidance sensor, is critical to the success of the mission. It will measure the positions of very faint stars to extremely high accuracy. This is necessary for JWST to achieve the high quality of images required by the scientific objectives," added Mr. Alan Haase, Senior Vice-President and General Manager of EMS Technologies' Space and Technology Group. "We are also including a tunable filter camera that will provide unique scientific capabilities."

NRC's Herzberg Institute of Astrophysics (HIA) has played a key role in this scientific mission, working with CSA and its contractors to establish the Canadian contribution and helping with early design work. The Canadian project scientist, Dr. John Hutchings of HIA, also leads a team of scientists from across the country in planning the instrument function, calibrations and early science investigations. Canada has guaranteed science time on JWST as a partner in the project. Canadian scientists are also members of the U.S. and European teams producing two of the other instruments.

"When launched in 2011, JWST will peer into the past to greater distances than ever before," says Dr. Hutchings. "With it, we will be able to observe the formation of the first stars and galaxies in the universe,

close to the beginning of time."

With an aperture diameter of 6.5 m, the surface area of JWST's main mirror will be seven times larger than Hubble's, and hundreds of times more sensitive than any other telescope. Its five-layer sunshield-almost as large as a tennis court-will keep the instruments at 37 degrees above absolute zero and will allow the telescope to detect faint, red-shifted signals from the early stages of the universe. The JWST will be stationed 1.5 million km from Earth at the Second Lagrangian Point (L2). This location lies beyond the Earth's orbit, thus the bright Earth is never seen by JWST; this reduces problems with stray light.

Source: Canadian Space Agency

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