China launches 3rd and final space station component

October 31 2022

In this photo released by Xinhua News Agency, the Long March-5B Y4 carrier rocket carrying the space lab module Mengtian, blasts off from the Wenchang Satellite Launch Center in south China's Hainan Province, Monday, Oct. 31, 2022. China has launched the third and final module to complete its permanent space station, realizing a more than decade-long endeavor to maintain a constant crewed presence in orbit. Credit: Hu Zhixuan/Xinhua via AP

China's third and final module docked with its permanent space station Tuesday to further a more than decade-long effort to maintain a constant crewed presence in orbit, as its competition with the U.S. grows increasingly fierce.

The Mengtian module arrived at the Tiangong station early Tuesday morning, state broadcaster CCTV said, citing the China Manned Space agency.

Mengtian was blasted into space on Monday afternoon from the Wenchang Satellite Launch Center on the southern island province of Hainan. It was expected to take about 13 hours to complete the flight and docking mission.

A large crowd of amateur photographers, space enthusiasts and others watched the lift-off from an adjoining beach.

Many waved Chinese flags and wore T-shirts emblazoned with the characters for China, reflecting the deep national pride invested in the space program and the technological progress it represents.

"The space program is a symbol of a major country and a boost to the modernization of China's national defense," said Ni Lexiong, a professor at Shanghai University of Political Science and Law, underscoring the program's close military links.

"It is also a boost to the confidence of the Chinese people, igniting patriotism and positive energy," Ni said.

Mengtian, or "Celestial Dream," joins Wentian as the second laboratory module for the station, collectively known as Tiangong, or "Celestial Palace." Both are connected to the Tianhe core module where the crew lives and works.

Like its predecessors, Mengtian was launched aboard a Long March-5B carrier rocket, a member of China's most powerful family of launch vehicles.

Tiangong is currently populated by a crew of two male and one female astronauts, according to the China Manned Space Agency.

Chen Dong, Cai Xuzhe and Liu Yang arrived in early June for a six-month stay on board, during which they will complete the station's assembly, conduct space walks and carry out additional experiments.

In this photo released by Xinhua News Agency, people watch the Long March-5B Y4 carrier rocket carrying the space lab module Mengtian, blasts off from the Wenchang Satellite Launch Center in south China's Hainan Province, Monday, Oct. 31, 2022. China has launched the third and final module to

complete its permanent space station, realizing a more than decade-long endeavor to maintain a constant crewed presence in orbit. Credit: Yang Guanyu/Xinhua via AP

Following Mengtian's arrival, an additional uncrewed Tianzhou cargo craft is due to dock with the station next month, with another crewed mission scheduled for December, at which time crews may overlap as Tiangong has sufficient room to accommodate six astronauts.

Mengtian weighs in at about 23 tons, is 17.9 meters (58.7 feet) long and has a diameter of 4.2 meters (13.8 feet). It will provide space for science experiments in zero gravity, an airlock for exposure to the vacuum of space, and a small robotic arm to support extravehicular payloads.

The already orbiting 23-ton Wentian, or "quest for the heavens" laboratory is designed for science and biology experiments and is heavier than any other single-module spacecraft currently in space.

Next year, China plans to launch the Xuntian space telescope, which, while not a part of Tiangong, will orbit in sequence with the station and can dock occasionally with it for maintenance.

No other future additions to the space station have been publicly announced.

In all, the station will have about 110 cubic meters (3,880 cubic feet) of pressurized interior space, including the 32 cubic meters (1,130 cubic feet) added by Mengtian.

China's crewed space program is officially three decades old this year, with the Mengtian launch being its 25th mission. But it truly got

underway in 2003, when China became only the third country after the U.S. and Russia to put a human into space using its own resources.

The program is run by the ruling Communist Party's military wing, the People's Liberation Army, and has proceeded methodically and almost entirely without outside support. The U.S. excluded China from the International Space Station because of its program's military ties.

Despite that, China is collaborating with the European Space Agency on experiments aboard Mengtian, and is cooperating with France, Germany, Italy, Russia, Pakistan and the UN Office for Outer Space Affairs (UNOOSA) on a range of projects from aerospace medicine to microgravity physics, according to the Chinese Academy of Sciences.

Prior to launching the Tianhe module, China's Manned Space Program launched a pair of single-module stations that it crewed briefly as test platforms.

The permanent Chinese station will weigh about 66 tons—a fraction of the size of the International Space Station, which launched its first module in 1998 and weighs around 465 tons.

In this photo released by Xinhua News Agency, China's space station lab module Mengtian and the rocket Long March-5B Y4 is transported to the launch area at the Wenchang Satellite Launch Center in south China's Hainan Province on Oct. 25, 2022. China has launched the third and final module to complete its permanent space station, realizing a more than decade-long endeavor to maintain a constant crewed presence in orbit. Credit: Tu Haichao/Xinhua via AP

With a lifespan of 10 to 15 years, Tiangong could one day find itself the only space station still running, if the International Space Station adheres to its 30-year operating plan.

China has also chalked up successes with uncrewed missions, and its lunar exploration program generated media buzz last year when its Yutu 2 rover sent back pictures of what was described by some as a "mystery

hut" but was most likely only a rock. The rover is the first to be placed on the little-explored far side of the moon.

China's Chang'e 5 probe returned lunar rocks to Earth for the first time since the 1970s in December 2000 and another Chinese rover is searching for evidence of life on Mars. Officials are also considering a crewed mission to the moon.

The program has also drawn controversy. In October 2021, China's Foreign Ministry brushed off a report that China had tested a hypersonic missile two months earlier, saying it had merely tested whether a new spacecraft could be reused.

China is also reportedly developing a highly secret space plane.

China's space program has proceeded cautiously and largely gone off without a hitch.

Complaints, however, have been leveled against China for allowing rocket stages to fall to Earth uncontrolled twice before. NASA accused Beijing last year of "failing to meet responsible standards regarding their space debris" after parts of a Chinese rocket landed in the Indian Ocean.

China's increasing space capabilities also featured in the latest Pentagon defense strategy released Thursday.

"In addition to expanding its conventional forces, the PLA is rapidly advancing and integrating its space, counterspace, cyber, electronic, and informational warfare capabilities to support its holistic approach to joint warfare," the strategy said.

The U.S. and China are at odds on a range of issues, especially the self-governing island of Taiwan that Beijing threatens to annex with force.

China responded to a September visit to Taiwan by U.S. House Speaker Nancy Pelosi by firing missiles over the island, holding wargames and staging a simulated blockade.

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Citation: China launches 3rd and final space station component (2022, October 31) retrieved 25 March 2023 from https://phys.org/news/2022-10-china-3rd-space-station-component.html

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