



The crew of Shenzhou XVIII and Shenzhou XIX pose for a photo on Wednesday inside the Tiangong space station. XU BU / FOR CHINA DAILY

Shenzhou XIX crew greeted at 'space home'

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The three crew members of Shenzhou XIX entered the Tiangong space station on Wednesday afternoon, as the spaceship successfully completed docking maneuvers after a long-haul flight.

Inside Mission commander Senior Colonel Cai Xuzhe, Lieutenant Colonel Song Lingdong and Lieutenant Colonel Wang Haoze were greeted with hugs at the space station by their Shenzhou XVIII peers, who are scheduled to return to Earth early next week.

Shenzhou XIX, which started its journey into space atop a Long March 2F carrier rocket that blasted off from Jiuquan Satellite Launch Center in northwestern China at 4:27 am on Wednesday, docked with the front port of the Tianhe core module — the main body of Tiangong — after a six-and-a-half-hour flight.

Following the docking process, the Shenzhou XIX crew spent nearly two hours on preparatory work to enter the space station, which included readying related

equipment and changing into intravehicular suits from their pressure suits.

Meanwhile, the Shenzhou XVIII astronauts — mission commander Senior Colonel Ye Guangfu and crew members Lieutenant Colonel Li Cong and Lieutenant Colonel Li Guangsu — waited inside the connection cabin.

After all preparations were done, Ye's team opened a hatch in the connection cabin at 12:51 pm to welcome the new team of astronauts. The first to step out of the Shenzhou XIX spaceship was Cai, followed by Song and Wang, who were all welcomed with hugs by the Shenzhou XVIII astronauts.

The six astronauts then exchanged greetings inside the Tianhe module. Ye said he and his team were very happy and excited to see the arrival of Cai's crew, adding that over the next few days, the two teams will work together inside "this space home".

Cai responded by saying it feels great to see "there are people waiting here for us", and that he always wished to return to the space station.

"And now I am back, and it feels very good to see all these familiar things inside Tiangong. I am so



A Long March 2F rocket carrying the Shenzhou XIX spaceship lifts off on Wednesday morning from Jiuquan Satellite Launch Center in northwestern China. CHEN KUN / FOR CHINA DAILY

happy to see that you have run this station very well and done so many excellent jobs. We will learn from you, and please share with us your valuable experience," he added.

Li Cong and Li Guangsu said they look forward to spending the next few days with the new team, and have prepared the sleeping and sanitary quarters for the team. They said they have also prepared some "surprise gifts" for the new crew to discover and have planted lettuce that they wish to share.

After their chat, the six astronauts posed for group photos amid cheers from ground controllers. They held each other's arms to form a circle, in a spontaneous show of happiness and excitement.

The meeting of the two groups of astronauts marked the beginning of the fifth in-orbit shift inside the Tiangong space station, one of the largest and most advanced structures ever deployed into the Earth's orbit.

The Shenzhou XIX team is the eighth group of inhabitants aboard Tiangong, which was completed in late 2022. The six astronauts will work together for about five days, and the Shenzhou XVIII crew will depart for Earth on Monday.

Talent transfer to next gen aboard Shenzhou XIX

The three astronauts on China's Shenzhou XIX spaceflight mission have docked at the Tiangong space station and met with the astronauts living there on Wednesday, starting a new round of in-orbit crew handover.

This is a significant journey in that two out of the three astronauts on board were born in the 1990s. Particularly Wang Haoze, one of the two astronauts, worked as a senior engineer with China Aerospace Science and

Technology Corporation. It shows the importance China attaches to scientific research in astronautics.

The team's commander, Cai Xuzhe, was part of the earlier Shenzhou XIV mission. China already has dozens of serving astronauts and now the team has a balanced mix of experienced and new members.

During their stay in Tiangong, apart from carrying out the scheduled experiments, the three astronauts will also

receive the Tianzhou 8 cargo ship, which will arrive with supplies for them, and, later, Shenzhou XX, which will arrive with a new crew that will replace them. The technologies involved in the two missions are not new, but they will be further tested this time so as to be mature enough to form a stabler loop in which Tiangong will be a long-term base for astronauts in space.

— ZHANG ZHOUXIANG, CHINA DAILY

Wu Jinyuan

Shenzhou XIX mission a journey of progress

At precisely 4:27 am Beijing time on Oct 30, China's Shenzhou XIX spacecraft soared into the night sky aboard a Long March 2F rocket. With an efficient autonomous rapid docking system, Shenzhou XIX docked just 6.5 hours later with the Tianhe core module of China's Tiangong space station, settling in at forward port. As Shenzhou XIX docked smoothly, it's hard not to feel a growing sense of pride in the country's space program.

The launches and successful space missions have now become symbols of excellence, and increased people's confidence in China's prowess in the field of science and technology.

This confidence didn't emerge overnight. I still vividly remember standing on the sandy shores of Wenchang in 2021 with my colleagues, hearing the roar of Tianhe's launch, seeing the sky light up, and joining the thousands of voices cheering as the core module ascended. The memories stretch back further to 2003, watching the launch of Shenzhou 5 with bated breath in my dorm at Beihang University, anxious for Yang Liwei's safety. More than 20 years later, China's space achievements have become examples of space exploration.

Shenzhou XIX represents the 33rd mission of China's manned space program and the fourth manned mission during the space station's development phase. The new crew comprises both familiar and new faces: Cai Xuzhe, previously on Shenzhou XIV, returns as mission commander, while two young astronauts, Song Lingdong and Wang Haoze, both born in the 1990s, make their first journey into space. Incidentally, Wang is only the third female Chinese astronaut, and also a pioneering spaceflight engineer.

China's first female astronaut, Liu Yang, and the first woman to fly twice, Wang Yaping, have left a legacy of inspiration for young women. In the course of my work, I've met students in rural areas, and have heard many girls, inspired by the female astronauts, say that they too want to fly into space. Hopefully, Wang Haoze's flight will inspire a new generation of young women who perhaps believe space is indeed within reach.

Wang Haoze's journey is unique as she joins this mission as an aerospace engineer responsible for the critical upkeep and operation of the spacecraft's equipment. Unlike her bespectacled colleague Gui Haichao, a payload specialist, Wang

Haoze manages the technical systems, and is in charge of maintenance and repairs. Before joining the astronaut team, she was a rocket engineer, earning the affectionate nickname "the first Chinese rocket engineer to fly on (a real) rocket".

Life aboard the Tiangong space station is not easy. The Shenzhou XIX team will undertake 86 science and technology experiments, covering everything from trying to grow plants in space to conducting genetics studies. Perhaps most intriguing is the "space farm": Cai may pick up his lettuce-growing project from two years ago, while Song plans to cultivate sweet potatoes, giving the mission a gardening touch.

The mission will also test how fruit flies — a common model in genetic research due to their short lifespan and high genetic similarity to humans — react to microgravity and low magnetic environments. About 75 percent of human disease genes exist in fruit flies, making them ideal for studying the biological impacts of

space travel. For instance, how will humans fare on the moon or Mars, where gravity and magnetic forces differ dramatically from Earth's?

In an exciting sneak peek into the future, Shenzhou XIX's crew will expose lunar soil bricks to the harsh elements of space. These soil bricks, replicas created from samples returned by the Chang'e 5 and 6 lunar missions, will face space radiation and extreme temperature fluctuations. The ultimate goal? To someday build structures on the moon from locally sourced materials. A "village" built on the moon from lunar soil is an astonishing concept that could soon become a reality.

China's preparations for manned lunar exploration are underway. The fourth group of astronaut trainees began their rigorous training in August, with the group including specialists from the Hong Kong and Macao special administrative regions. To make their in-orbit lives more comfort-

able in the future, the team has even planned Cantonese-style space meals — a touch of home miles above Earth.

Walking on the moon, however, is not simply a matter of visiting the space station. Due to the moon's lower gravity, astronauts must undergo special training for lunar mobility. With just one-sixth of Earth's gravity, even a light step could propel them meters above the lunar surface. China's manned lunar lander, Lanyue (which means "Embracing the Moon"), will play a crucial role in the success of the mission. Redesigned from the Chang'e 5 model, it will support the more challenging tasks of the manned spacecraft's soft landing and lifting off.

On the lunar surface, a distant 380,000 kilometers from Earth, there's no robust launch support system like the one at the Jiuquan Satellite Launch Center in Northwest China, or the on-site backing of tens of thousands of engineers and designers. Lunar astronauts, relying solely on the support of the Lanyue lunar lander, will have to ignite fuel for liftoff from the lunar surface, a challenge which is very difficult to meet.

Of course, all space missions come with risks. Even as we celebrate Shenzhou XIX's success, we're reminded of the challenges. Since earlier this year, two US astronauts have been stranded on the International Space Station due to the malfunctioning of a spacecraft. Every mission includes countless steps, each with potential risks, as shown in the history of manned spaceflight, including dramatic rescues like Apollo 13's safe return.

China's manned space program has a "one launch, one backup" policy, with a backup rocket and spacecraft ready in case of any emergency. Since the Shenzhou XII mission, a second rocket has been kept on standby, ready to launch for a rescue mission if needed.

As Shenzhou XIX embarked on a six-month journey of exploration, let's wish its crew success and safety. With each space mission, China takes another step closer to fulfilling its ambitious goals in space, inspiring us all to look upward — and forward.

The author is vice-president of Aerospace Knowledge Magazine. The views don't necessarily reflect those of China Daily.

