



Call for solidarity
Erdogan vows to build 'Century of Turkiye' after reelection win
WORLD, PAGE 12

China remains photovoltaics powerhouse
BUSINESS, PAGE 13

Classic music
Guzhen's sound seems to embody resonance of Chinese culture
LIVING HERITAGE, PAGES 16-17



香港版
HONG KONG

CHINA DAILY

TUESDAY, May 30, 2023

中國日報

www.chinadailyhk.com HK \$10



Jing Haipeng (center), commander of the Shenzhou XVI mission, Zhu Yangzhu (right), the mission's spacecraft engineer, and Gui Haichao, the mission's payload expert, meet the media on Monday at Jiuquan Satellite Launch Center in northwestern China. WANG JIANGBO / FOR CHINA DAILY

China to send 1st civilian into space aboard Shenzhou XVI

By ZHAO LEI
at Jiuquan Satellite Launch Center
zhaolei@chinadaily.com.cn

The Shenzhou XVI spacecraft will set out on Tuesday morning to transport three Chinese astronauts to the Tiangong space station, the China Manned Space Agency said on Monday.

The journey will be the maiden flight of China's third generation of astronauts, and the first time a Chinese civilian has traveled to space.

Lin Xiqiang, deputy director of the agency, gave details of the flight at a news conference on Monday morning at the Jiuquan Satellite Launch Center in northwestern China. The crew members of Shenzhou XVI — mission commander Major General Jing

Haipeng, Colonel Zhu Yangzhu and Professor Gui Haichao — will be lifted in the spacecraft by a Long March 2F carrier rocket at 9:31 am on Tuesday from the Jiuquan center in the Gobi Desert.

On Monday morning, the Long March 2F rocket began being filled with propellants at the service tower, Lin said.

After the Shenzhou XVI enters orbit, rapid rendezvous-docking mode will be activated for the spacecraft to approach and then connect with the radial port on the Tianhe core module, according to the official.

Jing's team will take over the Tiangong space station from their peers from the Shenzhou XV mission — commander Major General Fei Junlong, Senior Colonel Deng

Qingming and Senior Colonel Zhang Li — who arrived on Nov 30.

The Shenzhou XVI crew members will stay inside the Tiangong station for around five months and are scheduled to return in November. They will carry out several spacewalks during the mission to mount equipment outside the station and also conduct maintenance work, Lin said.

Other major tasks include assisting with the docking and departure of visiting spacecraft such as cargo ships and a space-based telescope, conducting scientific experiments and demonstrations of technology, and hosting science lectures, Lin said.

Jing and Zhu are members of the People's Liberation Army's Astronaut Division, while Gui is a

doctoral supervisor at Beihang University's School of Astronautics' Department of Spacecraft and Launch Vehicle Technology in Beijing. All three crew members each have a doctorate.

It will be Jing's fourth spaceflight, making him China's most experienced astronaut.

Zhu, the spacecraft engineer, and Gui, the mission's science payload specialist, are the first members of the country's third generation of astronauts to enter the space.

See Mission, page 3

Inside

See more, pages 3, 4
Comment, page 10

TOP NEWS

China aims to make manned moon landing before 2030

Research arranged for carrier rocket, capsule, suit and launch facilities

By ZHAO LEI at Jiuquan Satellite Launch Center
zhaolei@china-daily.com.cn

China plans to send astronauts to the moon before 2030, a space official said on Monday.

Lin Xiqiang, deputy director of the China Manned Space Agency, said at a news conference at the Jiuquan Satellite Launch Center in northwestern China that the country's space authorities have launched the manned lunar program.

"The overall goals are to realize China's first manned landing on the moon before 2030, carry out scientific exploration and related technology demonstrations on the lunar surface, develop a commuting system and short-term stay system for crewed and unmanned lunar rovers, integrated testing and other key technologies," Lin said.

"Our astronauts will walk on the moon, collect samples around the landing site and perform some *in situ* research. This will lead off our manned missions from low-Earth orbit to deep space and help deepen mankind's knowledge about the origin and evolution of the moon and the solar system," the official said.

Lin made the remarks while answering a question from China Daily on whether and when China will send its astronauts to the moon.

To achieve this mission, Lin's office has arranged the research and development of all relevant systems, including the new Long March 10 carrier rocket, a lunar landing capsule and a lunar extravehicular suit. New rocket testing and launch facilities will also be constructed, he added.

Lin said that the agency will publish notices in due course to solicit scientific payloads to be carried during the manned mission, as well as



Shenzhou XVI crew members Jing Haipeng (center), Zhu Yangzhu (left) and Gui Haichao receive training in a spaceflight simulator on May 8. XU BU / FOR CHINA DAILY

conceptual designs for the mission's lunar rover.

According to a notice published on the agency's website on Monday, the manned lunar rover will be able to carry two astronauts and will have positioning, communications and scientific detection functions.

Wang Yanan, editor-in-chief of Aerospace Knowledge magazine, said on Monday that a new stronger carrier rocket should be the first system Chinese space researchers develop to make the moon mission possible.

"Only after we have the Long March 10 can we send large, sophisticated crew capsules to the moon and bring them back safely," he said.

According to the China Academy

of Launch Vehicle Technology, the nation's major carrier-rocket maker, the Long March 10 will be 88.5 meters tall, roughly the height of a 31-story residential building. The gigantic rocket will have a lift-off weight of 2,387 metric tons and will be capable of transporting spacecraft weighing at least 27 tons to an Earth-moon transfer trajectory.

Yang Yuguang, a senior space industry observer in Beijing and vice-chair of the International Astronautical Federation's space transportation committee, said in addition to the new rocket and lunar landing craft, extravehicular suits for astronauts to use on the lunar surface will also be very important for a crew's safety "con-

sidering the impact of the hazardous environment on the moon."

China's space authorities have announced a long-term plan to land astronauts on the moon and set up at least one science station there. They hope to use the manned missions to carry out scientific surveys and technological research, explore ways to develop lunar resources and strengthen the nation's space capabilities.

Zhou Yanfei, a deputy chief designer of China's manned space program, has said the country has the capacity to independently land astronauts on the moon because of its technologies, well-trained, innovative professionals and efficient research and management systems.

Mission: Tiangong station to be expanded in future, official says

From page 1

During their stay inside the station, Jing and Zhu will be mainly responsible for operating and maintaining the entire space station and performing technological tests. Gui has been assigned to operate scientific devices and conduct experiments, Lin said.

Until the latest mission, all Chinese astronauts who have taken part in spaceflights have been members of the People's Liberation Army. The first two generations of astronauts were selected from experienced Air Force aviators.

However, the third generation of astronauts includes civilians. It is comprised of 17 men and one woman split into three groups: seven spacecraft pilots; seven spaceflight engineers; and four science payload specialists.

Yang Yuguang, a senior space industry observer and vice-chair of the International Astronautical Federation's space transportation committee, said that the inclusion of a spaceflight engineer and a scientist in the flight crew is the most important feature of the Shenzhou XVI mission.

"Professor Gui is engaged in the research of spacecraft dynamics and control technology, so I believe he has advantages when it comes to doing related experiments onboard the Tiangong station," he said.

Pang Zhizhao, an expert on space exploration technology and a renowned writer on spaceflight, said, "The presence of an engineer and a scientist will enable more sophisticated experiments and tests to take place inside the space station because the new astronauts must have received



The presence of an engineer and a scientist will enable more sophisticated experiments and tests to take place inside the space station."

Pang Zhizhao, expert on space exploration technology

more training for science and technology operations."

Lin said China will launch new modules in the future to connect with the Tiangong station to create more room and better conditions for astronauts to live and conduct scientific work. After that, Tiangong's configuration will be expanded from the current "T" shape to a cross shape.

Yang said the first of the new modules is expected to be built with multiple docking ports, which will allow more science labs to connect with the station.

Earlier this month, the Tianzhou 6 robotic cargo spacecraft was launched from the Wenchang Space Launch Center in Hainan province to transport materials for the next manned missions. It was the first spacecraft to visit the Tiangong space station this year.

Orbiting about 400 kilometers above Earth, Tiangong on Monday consisted of three major components, the Tianhe core module and Wentian and Mengtian science lab modules, and it was also connected to two visiting craft, the Shenzhou XV crew ship and the Tianzhou 6 cargo ship.

Fourth generation of astronauts shortlisted

By ZHAO LEI at Jiuquan Satellite Launch Center

More than 100 candidates have been shortlisted for China's fourth generation of astronauts, including over 10 from the Hong Kong and Macao special administrative regions, according to a space official.

Lin Xiqiang, deputy director of the China Manned Space Agency, said at a news conference on Monday at the Jiuquan Satellite Launch Center in northwestern China that some 100 candidates have passed initial selection and they are competing for up to 14 places at the Astronaut Center of China.

"The spacecraft pilots will be chosen from aviators now serving in the Chinese armed forces. The spaceflight engineers will be selected from researchers and technicians in aerospace or related industries. The science payload specialists will be chosen from scientists working on space science and technology," Lin said.

China started recruiting the country's fourth generation of astronauts in October 2022. The recruitment and selection processes are due to be completed before the end of this year, according to the space agency.

Experts will pick 12 to 14 candidates for the new generation of astronauts. Among them, seven to



Generally speaking, an astronaut will be cleared for his or her first spaceflight after about two-and-a-half years of training, but that is subject to mission plans and developments."

Lin Xiqiang, deputy director of the China Manned Space Agency

eight will be pilots, three to four will be spaceflight engineers and two will be science payload specialists.

The selection of the fourth generation is the first time that people from Hong Kong and Macao have an opportunity to join the country's astronaut group.

"If the Hong Kong and Macao candidates can pass all tests and are picked by the experts, they will be sent to the astronaut center at the beginning of next year. Generally speaking, an astronaut will be cleared for his or her first spaceflight after about two-and-a-half years of training, but that is subject to mission plans and developments," Lin said.

Shenzhou XVI crew looks forward to challenge

By ZHAO LEI at Jiuquan Satellite Launch Center

Jing Haipeng, commander of the Shenzhou XVI spaceflight, said on Monday that his crew is ready and confident to make their coming mission a full success.

"We will be the first crew to live and work inside the Tiangong space station since it entered the application and development phase. My crew consists of a spacecraft pilot, a spaceflight engineer and a science payload specialist. This means that we are going to face heavier, more difficult tasks," Jing said at a briefing with reporters a day ahead of the launch of the mission at Jiuquan Satellite Launch Center in northwestern China's Gobi Desert.

He and his fellow astronauts — Zhu Yangzhu and Gui Haichao — spent a lot of time and energy during their training improving their skills in terms of space station control and analysis, decision-making and response capabilities.

"We discussed and made detailed plans for scientific experiments, spacewalks, maintenance and repair work, health management, and especially emergency response procedures, because we all know



Shenzhou XVI crew members Zhu Yangzhu (right) and Gui Haichao take part in underwater training on March 29. XU BU / FOR CHINA DAILY

that only after we have trained to reach the best of our skills and capabilities, could we handle any possible risks or emergencies," Jing said.

Despite Jing being 20 years older than his two fellow crew members, he said there is no generation gap between them. He described his two young peers as "energetic, diligent and self-motivated."

"We respect each other, learn from each other, and encourage and support each other. We are working toward the same goal," Jing said, noting that the crew members work harmoniously together.

Zhu, the spaceflight engineer on the Shenzhou XVI mission, said that he looks forward to his first space journey and will strive to accustom himself to the space envi-

ronment as soon as possible.

"I will use my energy, enthusiasm and expertise to maintain the good condition of all equipment and make the best use of each scientific experiment to produce as many scientific and technological achievements as possible," he said.

Jing added that his crew will take paintings by children from 10 African nations — Algeria, the Democratic Republic of the Congo, Egypt, Madagascar, Mali, Mauritius, Nigeria, Somalia, South Africa and Zimbabwe — to the Tiangong space station and display them. Those children are among the winners of a Chinese spaceflight-themed picture contest for youngsters around the world.

"The exploration of the universe is a shared aspiration of all people on this planet no matter where you come from, which race you belong to or how old you are. We will take the best of the children's memories, friendship and dreams to outer space. We will plant the seeds of science, friendship and dreams in our space station and wait for them to grow, blossom and bear fruit," he said, encouraging all children around the world to follow their dreams.

CHINA

Commander ready for record 4th mission

Interstellar veteran Jing Haipeng set to lead Shenzhou XVI team to orbiting Tiangong station

By ZHAO LEI
at Jiuquan Satellite Launch Center
zhao lei@china daily.com.cn

Major General Jing Haipeng, one of the first generation of Chinese astronauts, is an indisputable record-holder in China in terms of spaceflight experiences — he is the first Chinese person to return to space and the first to travel three times into orbit.

On Tuesday, he will become the first to carry out a fourth space journey through the coming Shenzhou XVI mission. He will also be a crew commander for the third time.

Born to a poor family in a village in Shanxi province's Yuncheng city, Jing is the first child of his farmer parents and has a brother and a sister.

Seeing his parents toiling day and night to raise their children, Jing studied very hard at school in the hope of going to university to get the family out of poverty and make his parents happy.

Jing recalled that because of the family's hardships, he never bought a single meal at middle school and lived on dry food and salted vegetables he brought on foot from home twice a week.

"The hard life had not only given me the guts to face difficulties and challenges, but also inspired me to pursue my dream," he said.

In his fourth year at middle school, the youngster saw in a pictorial some People's Liberation Army Air Force pilots training in their fighter jets.

"They were in aviator jackets and looked pretty cool. I wished I could be like them and become a fighter jet pilot safeguarding our motherland's blue skies," Jing said.

The opportunity soon came in March 1985 when officers from the PLA Air Force came to his school to recruit flight students. The young man applied and took part in the selection process.

Three months later, he was admitted to an Air Force flight college in Baoding, Hebei province.

After five and a half years of intense training, Jing had



The Shenzhou XVI crew (from left Zhu Yangzhi, Gui Haichao and Jing Haipeng) conducts rendezvous and docking training on Feb 28.

XU BU / FOR CHINA DAILY

impressed his instructors and graduated, and was designated to a fighter jet unit at the age of 24.

"Soon after I began to serve in the unit, one of my comrades died in flight training. He played basketball with us the day before the tragedy and left forever the next day. I was very sad but I understood that from the first day we became a military member and a pilot, we should all be dedicated to the nation and must get ready for possible sacrifices," the astronaut recalled.

"I always told myself that top aviators only come from those who train the hardest."

In the years in the fighter jet unit, Jing accumulated more than 1,200 hours of flight time and was recognized as a good pilot.

In the summer of 1996, Jing was told by his commander to undergo physical examinations at a sanatorium in Zhejiang province without knowing the reason.

He soon learned that the body check was part of the selection for China's first astronaut.

Seasoned traveler

After rounds of tough tests, Jing stood out among some 1,500 peers and was picked as one of the founding members of the PLA Astronaut Division in January 1998.

Jing and his colleagues in the division were supposed to receive and pass nearly 100 training subjects in five years including physics, astronautics, astronomy, space medicine as well as spacecraft operations.

"Each of us was likely to be 'eliminated' at any time if we failed tests, which were very difficult and demanding," he said.

"During my first 10 years at the division, I spent almost all of my time studying and training. I rarely went to bed before midnight because I was aware that I was racing against time to turn myself into

a qualified astronaut."

In 2005, Jing was selected as a backup crew member on the Shenzhou VI mission.

Three years later, he was chosen to be a formal member of the Shenzhou VII flight team.

In September 2008, the Shenzhou VII crew — Zhai Zhigang, Liu Boming and Jing — completed China's third manned spaceflight in their three-day orbital trip. During the mission, Jing assisted Zhai and Liu who made the country's first spacewalk.

In June 2012, Jing was named commander of the Shenzhou IX mission and embarked on his second spaceflight with two fellow astronauts — Liu Yang, who became the first Chinese woman in space through this mission, and Liu Wang.

The Shenzhou IX crew carried out the first astronaut-controlled docking between two spacecraft. They were the first Chinese astro-

nauts to move into another space ship in orbit.

In October 2016, Jing took part in his third space journey — on the Shenzhou XI — with Chen Dong. The pair flew 33 days in space, including 30 days onboard the Tiangong II experimental space station, performing the longest space mission by Chinese astronauts by that time.

During the monthlong flight, Jing and Chen conducted 38 scientific and technological assignments, ranging from running a trial on a robotic arm in-orbit to observing microgravity's effects on the cardiovascular system.

During this mission, they would become the first Chinese astronauts to run in space, because one task was to test a specially designed treadmill inside the Tiangong II.

"We were supposed to test the equipment's performance and obtain exercise data, because running in a weightless environment

could only be done in space," Jing said.

"But as it was the first time for any Chinese astronaut to use a treadmill in space, Chen and I failed many times because we couldn't get used to the new machine."

After a long time trying, the two finally discovered some "tricks" and accumulated experience doing physical exercise that has been proved useful in following long-term orbital missions, he noted.

"During our video link with President Xi Jinping, I reported to him that China's manned space program has reached a new height and we were proud of our great motherland," Jing said.

Aspiration for flight

"Each time I returned to Earth, people asked me the same question, 'Do you want to fly again?' My answer was always the same, 'I desperately want to go into space again!'" the veteran astronaut recalled.

Jing said he and his colleagues are aware that manned spaceflights are a glorious cause that is worth risking their lives for the pursuit of exploration and pioneering.

"You will know why spaceflight is deemed an adventurous cause when you are surrounded by the thunder of rocket engines. Nevertheless, this cause is one that we are willing to use our lives to pursue," he said.

"For me, I have been awarded many honors by the people and the Party. I was named an August 1 Medal by President Xi and also elected as a delegate to the Party's 19th National Congress. I think the best way for me to repay the debt I owe this nation is to try to carry out every assignment to the best of my abilities," Jing said.

He added that Chinese astronauts want to be in space share the same feeling.

"The farther we flew away from Earth, the nearer our hearts and thoughts were to the motherland. Each time we flew across China, our heartbeat would accelerate and our eyes would focus on our territories and seas."

"We want to thank all the scientists, engineers and workers who paved the way for our flights. Hundreds of thousands of them spent numerous days and nights designing, producing and testing rockets, spacecraft and equipment. They are also heroes and heroines," Jing said.

Gui Haichao to be 1st Chinese civilian in space

By ZHAO LEI
at Jiuquan Satellite Launch Center

The vocation of astronaut had for a long time seemed "sacred and distant" to Gui Haichao until the researcher became a member of the Astronaut Center of China. The 36-year-old from Yunnan province will become the first Chinese civilian to fly in space.

Fifteen years ago, Gui was a senior at the School of Astronautics under Beihang University, formerly known as the Beijing University of Aeronautics and Astronautics, majoring in spacecraft design and engineering.

"When Jing Haipeng was flying onboard the Shenzhou VII spacecraft in September 2008, I was still a university student. I watched the live broadcast of our nation's first spacewalk that was carried out by the Shenzhou VII crew," he said during a recent interview at the Astronaut Center of China in Beijing before heading to the Jiuquan Satellite Launch Center for his maiden flight.

"I just couldn't even imagine at that time that I would become a colleague of his and train and live in the same place. And now I am an astronaut in his crew and we will fly together to the space station," said Gui, now a professor and doctoral supervisor at Beihang University.

In the following years, Gui continued his study at Beihang and graduated in the summer of 2014 with a doctor's degree in spacecraft design.

The young researcher then spent two years in a post-doctoral program working on integrated directional and orbital control technology for

sophisticated spacecraft at the Department of Earth and Space Science and Engineering at York University in Toronto.

In the summer of 2016, Gui undertook post-doctoral research on the detection of small celestial bodies and high-precision forecast technology for spacecraft movement at the Department of Aerospace Engineering at Ryerson University, which was later renamed Toronto Metropolitan University.

He returned to Beihang in September 2017 after receiving the university's invitation to teach as an associate professor at the School of Astronautics.

At Beihang, the researcher's academic interests included spacecraft dynamics, guidance, navigation and control technology for aerospace systems. He has published more than 50 journal articles and academic conference papers.

In the spring of 2018, Gui and his colleagues were told by the school's president that China's manned space activities had decided to select the third batch of astronauts, including the first spaceflight engineers and science payloads specialists.

"The president told us that the posts of spaceflight engineers and science payload specialist would be open to civilians working for non-military research entities. He said this was a very precious opportunity and encouraged those interested to apply."

"I have been a fan of space exploration for many years and sometimes dreamed about doing my research in space, so I was excited hearing this news and immediately came to the



The Shenzhou XVI crew operate a medical research program during their training on March 9.

school's administrative office to fill in the application form," the academic recalled.

After rounds of physical checks and professional tests, Gui earned a place in the elite club and started training at the Astronaut Center of China.

According to Wang Yue, a classmate and co-worker of Gui at the School of Astronautics, Gui told him privately that the physical training at the astronaut center was "intense and demanding" and posed a huge challenge to him.

"But he didn't quit and managed to pass all tests," Wang said.

So Wang, Gui's first doctoral student, said the professor did not relax his attention and instruction on his students after he started training at the astronaut center.

"When his training schedule wasn't so tight, Professor Gui would read my papers and send me some articles he thought might be of help to my research," she said.

Speaking about his experience at the astronaut center, Gui said: "After joining this team, the 'heroes and

heroines' I had watched on TV and in the newspaper became the training mentors, sports mates, close friends as well as co-workers of us, the new astronauts."

Thanks to his perseverance and diligence, Gui progressed rapidly in every training course and was chosen for the Shenzhou XVI mission to become the first civilian and scientist in this country to travel in orbit.

During the coming flight, Gui will be responsible for operating, maintaining and repairing science equipment. He will control experiments and collect, sort and conduct initial analysis of data.

The professor said he feels fortunate and honored to become the first Chinese science payloads specialist to fly in space.

"I am sure that with mission commander Jing's guidance and the crew members' close cooperation, we will successfully perform our duties. We will use our efforts to contribute to the great 'New Era' and meet the expectations of the Party and the people," Gui said.

Engineer has been fan of flight since boyhood

By ZHAO LEI
at Jiuquan Satellite Launch Center

Zhu Yangzhi, the spaceflight engineer for the Shenzhou XVI mission, said he has loved the blue sky, aircraft and flying since he was a boy.

When he was a middle school student, Zhu recalled, he often did physical exercises on equipment designed for pilots at his school, which cooperates with the People's Liberation Army Air Force in selecting students for flight school.

"Before the national college entrance examination, I applied for a major in spacecraft systems and engineering at the National University of Defense Technology, and my second choice was a major in aircraft design and engineering at Nanjing University of Aeronautics and Astronautics. I made these choices because I wanted to learn about flight," Zhu told reporters at the Astronaut Center of China in Beijing before setting out to the Jiuquan Satellite Launch Center ahead of the Shenzhou XVI launch.

Because of his high grades, Zhu was admitted to the College of Aerospace Science and Engineering under the National University of Defense Technology in Changsha, the top educational body in the Chinese military for science and technology, in the summer of 2005 and remained there for the following decade.

At the university, Zhu was known for his dedication to study and research. He was also good at physical exercise, according to his classmates.

Peng Ke, a classmate, recalled

that Zhu often ran 10 kilometers during exercises while other students usually ran 3 km. Zhu also likes cycling, Peng said, noting that one time Zhu rode for 14 hours to Loudi, another city in Hunan province about 150 km from Changsha.

"He was outstanding at the university when it came to body strength," Peng said. "There was a 'flying wheel' in the university that was used to hone aviators' endurance. A lot of us tried it but we just couldn't resist the strong trauma caused by the fast spinning. But it seemed pretty easy for Zhu to use it."

At the end of 2015, Zhu graduated from the university with a doctorate and then reported to an infrastructure construction unit of the PLA to assume his first engineering post. He also took part in a post-doctoral program run by the PLA Army Engineering University in Nanjing.

In 2017, he was transferred to the PLA Strategic Support Force's Space Engineering University to help establish a mechanics laboratory.

In the summer of 2018, Zhu heard about the selection of China's third-generation astronauts and decided to throw his hat in the ring.

"I didn't make it into the Air Force to fly fighter jets in blue skies, but then came this opportunity for me to fly spacecraft outside of Earth's atmosphere, so I was determined to try my best to chase it," he recalled.

After many difficult tests, Zhu stood out among thousands of applicants and was recruited by the PLA Astronaut Division in October 2020.

Quentin Parker

Cooperation, not race, in space

Fierce rivalry in human endeavor is as long as the history of humanity itself and often spills over into something more destructive and dangerous. Fortunately, this is not the only human story. Collaboration, cooperation and constructive alliances have also played major roles in the emergence of the modern world that has also been shaped by war.

The latest examples of global cooperation include shared research, data and even technology during the COVID-19 pandemic, which shows that during a threat to humankind as a whole, large parts of the world can actually come together to take timely actions, even if only briefly, to tackle a common threat.

The same is happening with climate change and the accompanying environmental degradation. Major countries are trying to find shared practical solutions to such problems so as to build a better world. The aim is to enable humankind to mitigate the worst effects of global warming that are becoming increasingly frightening.

In this context, the United Nations Environment Programme, the Intergovernmental Panel on Climate Change and the Conference of the Parties to the UN Framework Convention on Climate Change are leading the initiatives to address this most pressing of issues. Despite its drawbacks, the UNFCCC remains the best international "umbrella" body to debate, reason, act and deliver for humankind and a better and more eco-friendly world.

China is ready to play its full part in not just the UNFCCC but also bilateral and multilateral programs in order to foster beneficial outcomes for all sides across multiple fields, including space. Many non-aligned countries are beginning to see the wisdom and advantages of closer cooperation in space and other fields, from agriculture to infrastructure and transport to resource management, for the benefit of all.

The China-proposed Belt and Road Initiative is a prime example of such win-win intent and project. Despite Western rhetoric, I believe China is earnest in its intent about facilitating international cooperation including in space exploration. I have seen this many times over the past eight years since I arrived in Hong Kong, and visited the Chinese mainland. This is the feedback I have got from individual scientists in my field of space research, university leadership teams and city and local government representatives in many mainland cities.

Their common feature is that they want to foster talent and use it, work with it, build on it, and even share their research results to promote cooperation.

As a multipolar world is emerging, the need to work together, not against each other, is becoming increasingly important. It is necessary to appropriately respond to this call if we want to neutralize the efforts of the vested interests to

subtly and not so subtly prise us further apart and into rigid camps, where the risks of and calls for war that follow grow.

We need to make serious and sincere efforts together, and not against each other, as required, for example, to effectively fight climate change.

I believe that at the heart of the efforts to facilitate global cooperation in areas of mutual interest, for genuine win-win global collaboration, is the issue of building trust. Not just trust in each partner's intent, but trust in the promise to allocate adequate resources for joint scientific and technological collaboration.

Working together on major research projects of global significance is one way of building mutual trust, which we need to promote prosperity among the human race and avoid destructive outcomes.

When you have trust it is a most precious commodity that can drive everything forward with confidence.

Indeed, this is already happening in the field of fusion power research in which China and the United States are major partners in the International Thermonuclear Experimental Reactor currently under construction in Southern France. This promises to deliver clean, limitless energy. The high-level scientific partnership between major powers can be done again in the field of space exploration and exploitation.

The impending demise of the International Space Station (originally slated for 2024 but now extended) and the emergence of the Chinese Space Station, I believe, provide an excellent opportunity to promote cooperation.

As an aside, the US Congress's move to stop China from participating in the International Space Station has backfired, I would say. But that has only served to turbocharge China's capacity to work on and

complete an even stronger space program. Today, China is a leading space power. The Chinese Space Station itself and much of its broader space programs, have always been open for international collaboration for the benefit of all humankind as the white paper published in 2021 makes very clear.

However, just like research on fusion, space activities, especially if carried out on a grand scale, the proposed moon bases and large telescopes like the James Webb are extremely cost-intensive. No country alone has a monopoly on talents, capacity, capability ideas and the infrastructure needed to forge a future for humankind in space.

A renewed call for global cooperation and participation in the Chinese Space Station, perhaps even including an open invitation for the US to formally join as a partner, could be a game-changer, promoting mutual trust between China and the US.

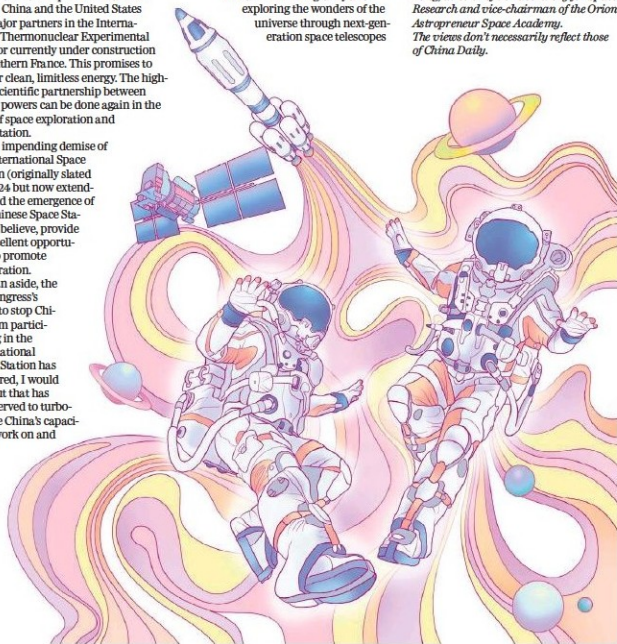
Advancing the frontiers of scientific research in microgravity and exploring the wonders of the universe through next-generation space telescopes

via global collaboration, especially between the US and China, can form a non-controversial scientific scaffold for generating mutual trust. This can have significant knock-on benefits in broader endeavors and diplomacy. Working together at the highest to lowest international levels on the basis of mutual trust forges friendship, fosters further collaborative projects and de-escalates tensions and harmful rivalries.

The US should not fear China's emergence. Instead, it should cash in on the opportunities and markets that this emergence brings for win-win collaboration, co-operation and competition.

As Chinese astronaut Nie Haisheng has said, "Space is a family affair; many countries are developing their space programs and China, as a big country, should make our own contributions in this field."

The author is a professor in the Faculty of Science at the University of Hong Kong, director of its Laboratory for Space Research and vice-chairman of the Orion Astronaut Space Academy. The views don't necessarily reflect those of China Daily.



JIN DING / CHINA DALY