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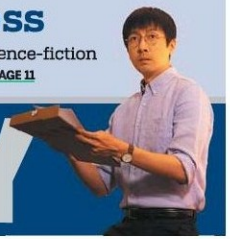

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Shenzhou XV crew have first spacewalk

By ZHAO LEI
zhaolei@chinadaily.com.cn

Major General Fei Junlong, commander of the Shenzhou XV mission, transfers equipment on Thursday before he returns to the Wentian science module on Friday. LIU FANG / XINHUA

The Shenzhou XV mission crew, who have been orbiting in the Tiangong space station for more than two months, have carried out their first spacewalk, said the China Manned Space Agency.

The agency said in a news release early on Friday morning that mission commander Major General Fei Junlong and Senior Colonel Zhang Lu completed a seven-hour spacewalk that started on Thursday afternoon and they returned to the Wentian science module at 12:16 am on Friday. The third crew member, Senior Colonel Deng Qingming, stayed inside the station to provide support, it added.

During the operation, Fei and Zhang fulfilled several tasks such as installing equipment on the space station's exterior.

This was the first spacewalk since the Tiangong station was completed and started its formal operations at the end of 2022, the agency noted.

Moreover, extravehicular installation work has recently started in order to mount scientific devices on the exterior of Tiangong, it added.

According to the China Academy of Space Technology, a major contractor in the Tiangong program, the Shenzhou XV crew used the robotic arm designed and built by the academy when they mounted extended pump sets and foot restraints outside the station.

The academy noted that Fei and Zhang made a lot of movements around all the station's three major sections during the spacewalk.

Pang Zhihao, a retired researcher at the academy and a renowned writer on spaceflight, said it was difficult and challenging for the astronauts to move the large-sized foot restraints and install them because such acts need a lot of strength and skill.

"This was the first spacewalk for Fei and Zhang and it required them to make many moves while wearing their heavy extravehicular suits. In addition, they needed to 'walk' around the entire station. So the operation was never easy. I am glad they finished it smoothly," he said.

By Friday morning, the Shenzhou XV crew had been inside the Tiangong station for 72 days.

Fei's team arrived at the station on Nov 30. They are scheduled to stay until May, when the Shenzhou XVI crew are due to take over.

The Shenzhou XV astronauts are tasked with conducting several spacewalks to mount equipment outside the station, installing and testing scientific cabinets, and conducting scientific experiments and technological demonstrations.

As one of the largest ever space-based assets, the Tiangong station currently consists of the Tianhe core module, the Wentian and Mengtian science capsules, the Shenzhou XV crew spacecraft and the Tianzhou 5 cargo ship.

Chinese astronauts have so far carried out nine spacewalks.

Satellites estimate quake damage

By LIU KUN in Wuhan
and LI HONGYANG in Beijing

A research team from Wuhan University in Hubei province is measuring the amount of light picked up by satellites to estimate the scale of damage in earthquake-stricken areas in Turkiye.

The team started the analysis by remote sensing technology on Tuesday, a day after the magnitude 7.8 earthquake struck southeastern Turkiye.

Current results showed that lights at night in Hatay, Kahramanmaras and Adiyaman have plummeted. Among them, more than 90 percent of lights disappeared in Hatay, indicating serious damage to infrastructure.

Li Xi, a professor of remote sensing science from the university, led the team, which collected satellite photos taken after the earthquake by organizations and institutions at home and abroad. They then compared them with pre-earthquake photos.

"A sudden loss of lights in such large areas shows that the power cut has severely affected the economy and daily life there," Li said, adding that analysis is ongoing.

On Thursday, a Wuhan University satellite took an image with a resolution of 20 meters, and Li's team is waiting for the satellite to transmit data.

Li said that they have come across some difficulties when shooting photos with optical satellites due to rainy and snowy weather in the disaster-hit areas. The three major cities experienced less cloudy and rainy weather, so they were able to get results.

"It was generally believed that the closer to the epicenter, the greater the damage. However, differences in regions' disaster response capabilities should be taken into account. Through the change of lighting, we can see how heavy the damage is and calculate cities' disaster response abilities. That helps decision-makers take more accurate relief measures," Li said.

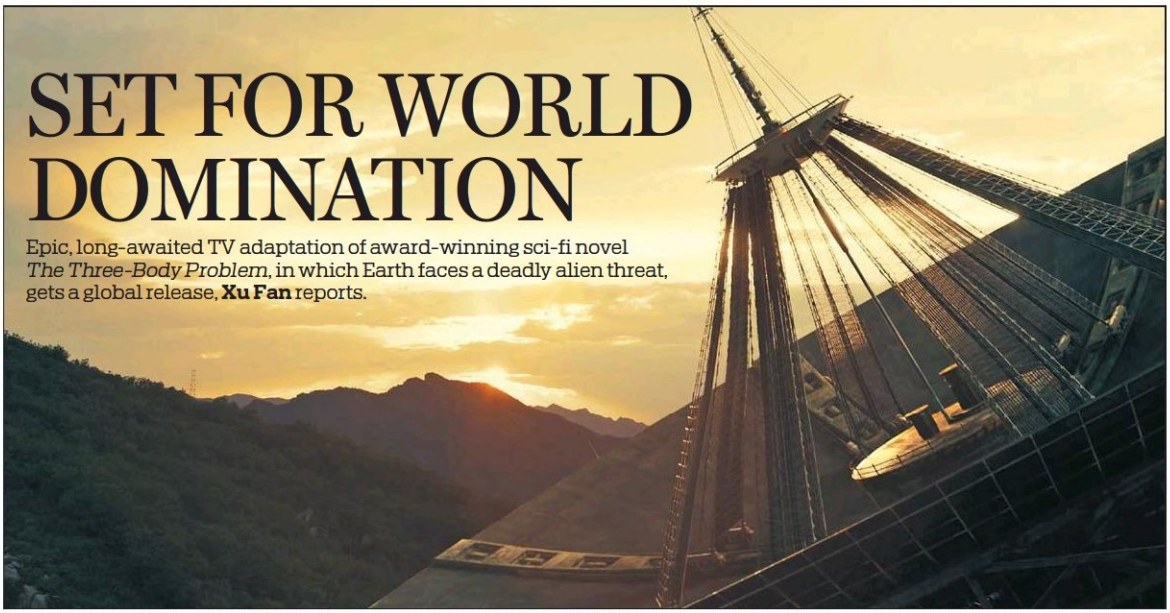
Li has informed the United Nations Satellite Center and the World Food Programme of their results to aid the organizations in making disaster-relief policies.

Following the earthquake, the UNSAT activated emergency mapping services and invited Li's team into the project.

Li's team has been engaged in the mapping services since 2017 to assess the impact of disasters by remote sensing for humanitarian purposes.

Contact the writers at lihongyang@chinadaily.com.cn

LIFE



SET FOR WORLD DOMINATION

Epic, long-awaited TV adaptation of award-winning sci-fi novel *The Three-Body Problem*, in which Earth faces a deadly alien threat, gets a global release, **Xu Fan** reports.

Above: A still from *Three-Body* depicting the fictional Red Coast Base where a secret program to search for extra-terrestrial life takes place. **Below:** A Chinese poster for the TV series, currently streaming on Tencent Video domestically and available with English subtitles on the company's YouTube channel. PHOTOS PROVIDED TO CHINA DAILY

In 2006, Bai Yicong stumbled upon the basis for *The Three-Body Problem* — the novel, which, nine years later, would go on to become Asia's first Hugo Award winner — in the magazine Science Fiction World. He was immediately captivated by the mind-bending epic.

Then at the start of his career as a scriptwriter in the television industry, Bai, who would later establish his own drama production company Linghe Culture Media, didn't realize the novel would become one of his most successful, yet also time-consuming, projects.

Taking a total of seven years, *Three-Body*, the long-awaited live-action TV adaptation of writer Liu Cixin's award-winning classic, has been brought to life, with hopes of being one of the most popular TV series in the Year of the Rabbit.

It has been released domestically and overseas, with subtitles in several languages, including English. So far, it has earned a rating of 8.2 points out of 10 on China's influential review site Douban and 7.8 on IMDb, the United States-based online movie and TV database.

Widely considered to be a milestone masterpiece, ushering in a new era for homegrown sci-fi works, *The Three-Body Problem* is the first book in Liu's *Remembrance of Earth's Past* trilogy (colloquially known as the *Three-Body* trilogy). It was first published in China in 2008, before being translated into English in 2014. After taking home the Hugo Award, the world's premier science-fiction award, the book made global headlines, becoming one of the most sought-after intellectual properties in China's burgeoning movie and TV industry.

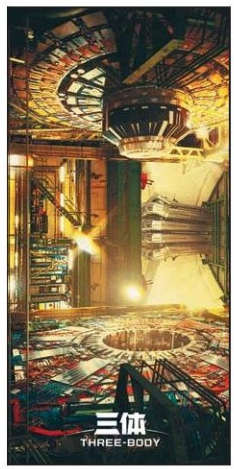
> "Such scenes inspired from typical modern Chinese lives make it more culturally familiar to all of us. For a moment, you would even believe what is depicted in the novel could take place in the real world."
>
> **Bai Yicong,** chief producer of *Three-Body*

However, the novel's stellar reputation has become something of a challenge to those who aspire to visualize the epic tale, bringing to life the conflict between humankind and Trisolarans, the fictional alien race depicted as ruthless invaders, scheming to conquer our planet after escaping their own uninhabitable home, which sits approximately 4.21 light-years from Earth.

Bai recalls that the major scenes deviate slightly from the book, as producers were worried that the complexity of some of the hardcore sci-fi elements in Liu's original work may be too technical, and some viewers could lose interest.

With the assistance of Liu, who participated in several meetings — with the longest lasting in excess of six hours — the script was revised more than 20 times between 2016 and 2020. Bai says he was excited to meet his literary idol and was surprised to find Liu was more receptive than he had imagined.

After convincing director Yang Lei, also a diehard sci-fi enthusiast, to join the production, Bai persuaded actor Zhang Luyi to play the protagonist Wang Miao, a reserved and determined nanomaterials scientist, and a key figure in the fight against the alien invaders.



Known for playing several bookish characters, most notably a mathematics teacher in the 2017 crime movie *The Devotion of Suspect X*, Zhang was the first candidate to pop into the casting team's mind, as he displays the right temperament for the character, according to Bai.

Aside from Zhang, veteran actor Yu Hewei plays Shi Qiang, a cunning police officer.

Actresses Li Xiaoran and Wang Ziwen respectively play Shen Yufei and Ye Wenjie, two scientists colluding with Trisolarans, as they wrongly believe the highly-advanced alien civilization can save humankind.

Starting in 2007, the TV series unfolds with a series of mysterious suicides of renowned scientists.

Wang and police officer Shi delve into the investigation and discover the Trisolaran plan to hinder Earth's scientific development to bide time for its fleet, which is set to arrive around 450 years in the future.

Producer Cai Jia says the drama features about 1,000 locations, which were shot in Zhoushan, Ningbo and Hangzhou in Zhejiang province, Heihe in Heilongjiang province, and Beijing between June and December in 2020.

As the tale touches on a string of complex scientific theories, Cai recalls they invited more than 30 Chinese scientists from various fields like physics and mathematics to give lectures to the cast and crew. They also managed to shoot several iconic scenes at China's top scientific sites, including the National Center for Nanoscience and Technology and the Beijing Electron Positron Collider's national lab.

For Cai and her fellow crew members, it was like a once-in-a-lifetime opportunity to participate in the production of *Three-Body*, which also led them to re-examine their own feelings concerning the continuation of civilization.

"Liu's *Three-Body* trilogy is a very interesting and intriguing classic. No matter how many times you read it, you will gain a new understanding every time," says Cai.

"One of its main charms lies in its bland depiction of an unprecedented crisis in seemingly routine, down-to-earth scenes. For example, scientist Wang and police officer Shi talk about the fate of humanity in a small restaurant, but Shi is also worried about his mortgage and his son's education," echoes Bai.

"Such scenes inspired from typical modern Chinese lives make it more culturally familiar to all of us. For a moment, you would even believe what is depicted in the novel could take place in the real world," says Bai.

Contact the writer at xufan@chinadaily.com.cn

From left: Zhang Luyi stars nanomaterials scientist Wang Miao. Liu Cixin (third left) and Bai Yicong (second right) during a shoot in Heilongjiang province, in 2020. A scene from the TV series shows Wang Miao (left) and police officer Shi Qiang investigating a string of mysterious suicides.