



Cultural bridge

Architecture student plays Chinese music in European streets to boost ties **LIFE, PAGE 18**

Solidarity urged in drafting 6G tech standards

BUSINESS, PAGE 13

Seeking truce

Mediation efforts get underway as alarm grows over hunger in Gaza

WORLD, PAGE 11



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Nation opens first simulated environment for space research

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China's first Space Environment Simulation and Research Infrastructure facility passed national-level acceptance review and officially began operations on Tuesday in Harbin, Heilongjiang province.

Developed by the Harbin Institute of Technology and the China Aerospace Science and Technology Corporation, SESRI is China's first large-scale scientific facility in the aerospace field, China Central Television reported on Wednesday.

SESRI will focus on addressing fundamental scientific and technological issues in a large research base for comprehensive space environments, spacecraft, life-forms and plasma interactions.

Referred to as the "ground space station", the ground-based facility is capable of simulating nine major space environmental factors — vacuums, high and low temperatures, charged particles, electromagnetic radiation, space dust, plasma, weak magnetic fields, neutral gases and microgravity.

Covering an area around the size of 50 soccer fields, it can be tailored to specific environmental factors based on scientific and engineering needs, allowing for multiple repetitions without being constrained by time and space, which enables the creation of safer and more convenient experimental conditions and research methods.

"It means that many experiments that previously required space travel can now be conducted on the ground," Li Liyi, deputy commander in chief of the project and head of the Institute of Space Environment and Material Science at Harbin Institute of Technology told Xinhua News Agency.

"Building such a basic scientific research platform that resembles the real cosmic space environment

is akin to bringing a space station to Earth.

"The facility is to ensure the safe operation of our country's spacecraft in orbit, support long-term human habitation, and enhance human capabilities in dealing with special and extreme space environments. It is now able to operate stably. Based on this research platform, we will be able to do more work in related research areas and provide research environments and conditions for scientists nationwide and worldwide in the future."

It took 18 years to finish the development of the project from initial discussions to official opening.

It began trial operation last year and has already served several domestic and international users, supporting the development of a variety of aerospace electronic components in China and the implementation of a series of major national aerospace missions, achieving several landmark results.

"The platform holds great importance to China in facilitating major breakthroughs in scientific and technological innovation, industrial transformation and upgrading, and the cultivation of highly skilled talent," said Han Jiecai, president of the Harbin Institute of Technology and an academican of the Chinese Academy of Sciences.

"We will continuously optimize the technical indicators of the facility, improve its scientific level, and promote scientific research and exploration based on the facility.

"We will strive to reveal more profound scientific laws, accelerate the formation of more independent intellectual property rights, and cultivate more world-class scientific and technological talent, making new and greater contributions to the significant leap of China from a major space power to a strong space power."