



The communications experiment between Xinglong Station and the world's first quantum mission in space – Quantum Experiments at Space Scale (QUESS) – which was launched in August 2016 as one of China's first batch of space science satellites.

Towards a National Lab for Space Science

By XIN Ling (Staff Reporter)

After successfully managing a string of scientific experiments in space, the National Space Science Center (NSSC) of CAS has put forward a more ambitious goal to bring together expertise and promote the continuation of their endeavor: building a “national lab for space science”.

At an international forum held in Beijing on November 29 and 30, 2017, NSSC director general WU Ji revealed one possible organizational structure of such a lab. It involves a headquarters that will be in charge of the strategic planning, international cooperation and top-level management of all domestic space science missions, as well as an advisory committee, a board, and subordinate centers and labs.

“To establish a national lab is probably the most feasible way to secure the continuous growth of space science in China, not in another five-year span but over a longer term, say 2020 to 2035,” said WU, who has overseen the first space science missions in the Chinese history – from the DARK Matter Particle Explorer (DAMPE) to the Quantum Experiments at Space Scale (QUESS) and the Hard X-ray Modulation Telescope (HXMT) – and is now implementing the second batch.

So far, space science missions in China are handled in a project-based and case-by-case way, explained ZHANG Shuangnan, forum participant and principal investigator of HXMT which had experienced severe funding shortage and other managerial issues. “A national program is absolutely necessary for the discipline’s development in the long run.”

With today’s space missions getting so challenging both technically and financially, many space agencies have to become more “centralized”, said Masaki Fujimoto, for instance the Institute of Space and Aeronautical Sciences under the Japan Aerospace Exploration Agency (JAXA),

for which he works as the research director.

Hopefully, the lab will partially solve the long-standing decentralization of China’s space community. At the moment, space activities in China are managed by three departments: China Manned Space Agency, who oversees Shenzhou and Tiangong series and the space station; the China National Space Administration (CNSA), which is the official representative of China in international cooperation; and the science sector, which is dominated by NSSC and some other CAS institutions.

Roger Bonnet, former director of the International Space Science Institute in Bern, observed that “China’s situation is that you have too many management players and too many scientific players *but* lack a visible, respected ‘orchestra conductor’.”

The current effort aims to consolidate the science part. “But space science and technology cannot really be divided,” said Dava Newman from the Massachusetts Institute of Technology. She suggested that representatives of CNSA and Manned Agency be included in the lab’s board.

Teams from the National Astronomical Observatories of CAS, the Institute of Remote Sensing and Digital Earth, the Technology and Engineering Center for Space Utilization, the CAS Institute of Mechanics, and the CAS Institute of Electronics have been invited to join the new framework.

The lab is a much-needed first step towards coordinating and unifying the entire space community in the country. WU hoped that by the end of this year, NSSC and the Beijing municipal government will be able to start something tentative in Huairou, an area in the northern suburbs of Beijing which is planned as a future “science city”. Meanwhile, he confessed it is still “unrealistic” to want to have China’s own space agency as an equivalent to ESA, NASA or JAXA due to sophisticated reasons.