Overview of China’s Space Technology and Space Science

March 8, 2016
1 Space Policy

- China always insists on peaceful use of the outer space.
Over 60 years, China’s space enterprises have formed a self-contained industry system for developing and manufacturing.
3 Space Transportation System

Long March (CZ) launch vehicle family, 12 versions

- 9,500kg (LEO)
- 5,500kg (GTO)
3  Space Transportation System

- CZ-5 will be capable of 25,000kg payload to LEO.
- A new heavy launch vehicle with much more payload capacity is in plan.
3 Space Transportation System

- Over 220 launches, successful launch rate 97.7%.
- Over 80 launches between 2010 and 2015.
Hainan launch center will be in service in 2016.
Providing TT&C support for missions such as satellite, manned spaceflight and deep space exploration.
China has established satellite systems in the following areas, such as earth observation, navigation, communication.
Earth observation satellite systems provide application services at multi-level, and become an important part of international earth observation system.

- Ziyuan, Gaofen land observation satellite
- Fengyun meteorological satellite
- Haiyang ocean satellite
Beidou-2 regional navigation system was put into services at the end of 2012.

35+ satellites are expected in orbit by 2020.
The capability of FSS, MSS, BSS, and data relay services were formed.
China promotes comprehensive scientific research and application of satellites.

- Construction of smart cities
- Navigation and positioning
- Telemedicine
- Environmental protection, etc.
In Sep. 1992, Chinese government made the decision to implement the manned space program and prescribed the “Three-step Strategy” of development.
China has implemented the Lunar exploration program by another “Three-step Strategy”.

The First-step and the second-step have accomplished by 3 Chang’e spacecraft.

Chang’e-1/-2

Orbiting

Chang’e-3

Soft-landing

Chang’e-5, 2017

Sample returning
The following Lunar exploration mission, Chang’e-4, will land on the far-side of moon first in 2018.
And Mars exploration program will be a dual-step strategy, including two missions.

- Orbiting
- Soft landing
- touring

Launching date: 2020

Launching date: ~ 2030
A number of space science missions have been done, such as Geospace Double Star Exploration Project.
Wukong, Dark Matter Particle Explorer launched on Dec. 17, 2015 is one of China space science missions, including Shijian-10 returnable microgravity experiment satellite, Hard X-ray Modulation Telescope, etc.
China National Space Administration (CNSA) has signed more than 100 space cooperation agreements with more than 30 national space agencies.
China- Brazil Space Cooperation

Cooperation Agreement

- Governmental Agreement on CBERS cooperation signed on July, 1988
- Governmental Agreement on Space Technology cooperation signed on September, 2000
- 16 cooperation documents on Governmental level
- 4 CBERS satellites were jointly developed
China-France

Cooperation Agreement

- Governmental Agreement on space cooperation signed on May, 1997
In 2005, CNSA proposed to establish the APSCO, with 8 members and 2 observers so far.
In Aug. 2015, Director Mr. Xu Dazhe proposed to establish BRICS Remote Sensing Constellation. The first working group meeting was held in Vienna two weeks ago.

- Brazil
- Russia
- India
- China
- South Africa
In Nov 2014, the UN-affiliated Regional Center for Space Science and Technology Education in Asia and the Pacific was set up in Beihang University, China.
Chinese government is willing to extensively cooperate with other countries on the basis of equality and mutual benefit, to peacefully utilize the outer space, and make contributions to human civilization and progress.
Thank You for your attention