China Space Station Bridges the world

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Recent Update

Core Module Tianhe

The Core Module Tianhe was launched into low Earth orbit by a Long March-5B on April 29, 2021.

Tianzhou 2 cargo ship

A Long March 7 rocket, carrying the Tianzhou 2 cargo ship, blasts off from the Wenchang Space Launch Pad on May 29, 2021.

Rendezvous and Docking

At 5:01 on May 30, Tianzhou 2 docked on the Tianhe Core Module in autonomous rapid rendezvous and docking mode.
CSS facts

- Experiment Module II: Microgravity Science, Fluid Physics, Fundamental Physics
- Shenzhou Manned Spaceship
- Experiment Module I: Life Science, Astronomy, Space environment, etc.
- Tianzhou Cargo Spaceship
- Core Module: Material Science, Space Medicine

<table>
<thead>
<tr>
<th>Experiment Rack</th>
<th>20+, in pressurized cabin</th>
<th>Microgravity level</th>
<th>10^{-3} on average, 10^{-7} can be achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload adaptor</td>
<td>67, exposed</td>
<td>Payloads support</td>
<td>17 tons, 12kW</td>
</tr>
<tr>
<td>Altitude</td>
<td>350-450km</td>
<td>Crew on board</td>
<td>3, 6 during rotation</td>
</tr>
<tr>
<td>Lifetime</td>
<td>≥10 years</td>
<td>Cargo ship</td>
<td>6t to orbit</td>
</tr>
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</table>
Utilization Support Capability

- Ecology Science Experiment Rack (ESER) (2022)
- Biotechnology Experiment Rack (BER) (2022)
- Science Glove-box and Refrigerator Rack (SGRR) (2022)
- Fluids Physics Experiment Rack (FPER) (2022)
- Two-phase System Experiment Rack (TSER) (2022)
- Combustion Experiment Rack (CER) (2022)
- Material Furnace Experiment Rack (MFER) (2022)
- Container-less Material Experiment Rack (CMER) (2021)
- Cold Atom Experiment Rack (CAER) (2022)
- High-precision Time-Frequency Rack I (HTFR) (2022)
- High-precision Time-Frequency Rack II (HTFR) (2022)
- Medical Sample Analysis and High Micro-gravity Level Rack (HMGR) (2021)
- Varying-Gravity Experiment Rack (VGGER) (2022)
- Online Maintenance and adjustment Operation Rack (OMOR) (2022)

- Space life sciences and biotechnology
- Microgravity fluid physics & combustion
- Material science in space
- Fundamental physics in microgravity
- Multipurpose
Realize a special experiment environment through electrostatic levitation technology, supporting research on metals and non-metals in a containerless condition in microgravity environment, explore related solidification mechanisms, and promote the development of new materials.
Medical Sample Analysis and High Microgravity Level Rack

Through the combined technology of magnetic levitation and jet levitation, the disturbance on the CSS is isolated, forming a microgravity level 1 to 3 orders of magnitude higher than the CSS environment, providing an ideal microgravity environment for aerospace medical analysis, fundamental physics research, etc.
Experiment Racks

Modularized Exp. Rack (MER)
provides interfaces to support small size scientific payloads.

Focusing on:
- The SPU and SDU interface can be compatible with ISS payloads.
- The rack can be made up to different combinations.
Utilization Support Capability

- Integrated exposed platforms are built on EM I and EM II, providing standard mechanical, power, information, and heat interfaces for exposed payloads.
- 3 large + 67 standard hanging points.
- A robotic arm is equipped and can install/uninstall and operate the exposed payloads.
Cooperation with UNOOSA

- 9 scientific projects have been approved to be implemented during the operation phase.
- The utilization mission of the CSS operation phase is under planning.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Country</th>
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</thead>
<tbody>
<tr>
<td>Effect of Microgravity on the Growth and Biofilm Production of Disease-causing Bacteria.</td>
<td>Peru, Spain</td>
</tr>
<tr>
<td>Flame Instabilities affected by Vortices and Acoustic Waves</td>
<td>China, Japan</td>
</tr>
<tr>
<td>Behavior of Partially Miscible Fluids in Microgravity</td>
<td>India, Belgium</td>
</tr>
<tr>
<td>POLAR-2: Gamma-ray Burst Polarimetry on the CSS</td>
<td>Switzerland, China, Germany, Poland</td>
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<tr>
<td>Spectroscopic Investigation of Nebular Gas</td>
<td>India, Russia</td>
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<tr>
<td>Development of Multi-junction GaAs Solar Cells for Space Applications</td>
<td>Saudi Arabia</td>
</tr>
<tr>
<td>BARIDI SANA - High Performance Micro 2-Phase Cooling System for Space Applications</td>
<td>Italy, Kenya</td>
</tr>
<tr>
<td>Mid Infrared Platform for Earth Observation</td>
<td>Mexico</td>
</tr>
<tr>
<td>Tumors in Space</td>
<td>Norway, France, Netherland, Belgium</td>
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</tbody>
</table>

![Pie chart showing distribution of projects](image-url)
Vision of International Cooperation

We welcome the international partners to join scientific utilization of CSS in the way of cooperative research or joint payload development, under the balance of win-win principle, to benefit the science communities and industries, and to promote the peaceful use of outer space.
Thank you!

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