

3 - 99 Progress on Platforms for Space Radiation Research at IMP

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For long-duration space flight to deep space, highly energized ionizing radiation of galactic cosmic rays as well as solar particle events is a crucial risk to the crews on mission. However, radiobiological studies carried out during space flights are unrepeatable due to the variable space radiation environment. In order to meet the demands for studies on risk assessments and countermeasures, two heavy ion experiment platforms for space research have been built at IMP. One is called high-LET platform, in which the highest LET of the beams reaches to thousands keV/ μm and the highest energy is 100 MeV/u. The other is called high-energy platform, which provides all kinds of heavy ions with the highest energy of 1 GeV/u for iron. Biology labs are located near to the radiation terminals. Experiments with carbon, nitrogen, oxygen and argon beams have been conducted on the platforms during the past years.

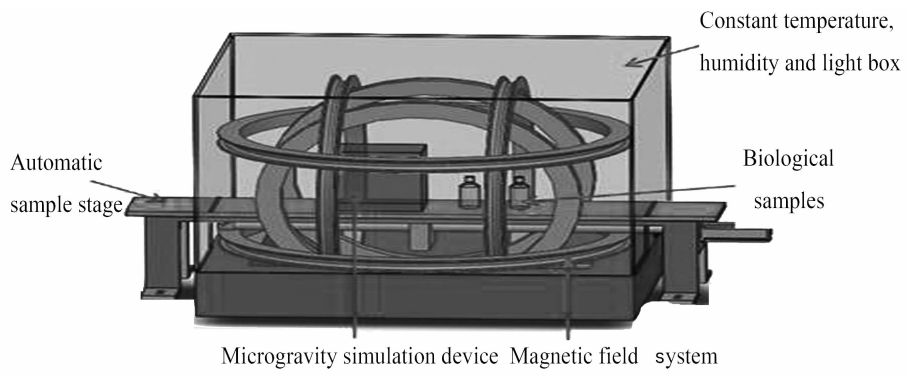


Fig. 1 The multifunctional device for ground-based simulation of space environment.

In order to simulate the complicated space environment, a multifunctional device, which will be set up at the radiation terminals, is still under construction. As shown in Fig. 1, the device can simulate most of the typical space environment factors including microgravity, magnetic field, circadian rhythm and airborne particulate matter. Once it is established, studies on the synergistic effects of multiple space environment factors will be available.

One of the main tasks of our department is to provide excellent experimental platforms to simulate space environment for research groups inside and outside China. The facilities and management will be continuously improved.