**Introduction to BRAIA the 4th Space Exploration Summer Camp and/or Space Experiments and Payload Innovation Design Contest**

# Background

Exploring the unknown world is the driving force for the progress of human civilization and society, and space exploration and development are the common pursuit of mankind. China’s space development has been making steady progress and is now striding towards the establishment of space stations. By June 2019, 9 projects from 23 entities in 17 countries have been selected as the first batch of projects to be carried on as space science experiments in China space station.

To implement the strategy of innovation-driven development, stimulate the passion of students and space technology enthusiasts, and encourage the public to participate more in scientific innovations, Belt and Road Aerospace Innovation Alliance (BRAIA) now invites teachers and students to take part in BRAIA the 4th Space Exploration Summer Camp and/or Space Experiments and Payload Innovation Design Contest, and call for innovation designs for scientific experiment and payload of space stations.

Excellent works would possibly be recommended and selected for reserved scientific experiments of space station, and may have the opportunity to be loaded and launched with the China space station or other international space stations.

# Themes and Contents

Focusing on the latest advance in science and technology development and the trend of future space, innovations are continually emerging in the fields related to space station payload experiments. Participants are particularly encouraged to generate innovative ideas that may have an impact on the development of future space science and technology. The competition themes are as follows.

## 2.1 Theme 1: Innovative Design of Space Station Experiment

The participating team can work on innovative designs of scientific experiments in China space station based on the space station environment without referring to the space station technical requirements illustrated in Appendix 1.

## 2.2 Theme 2: Design of Space Station Payload Experiment

Space station scientific experiment and corresponding payload scheme can be designed on the basis of any one of the following three space environments. The technical requirements can be taken as the reference.

* Payload experiment design in the intravehicular environment (normal temperature and pressure, microgravity, etc.) of the space station
* Payload experiment design in the extravehicular environment (high vacuum, microgravity, cosmic rays, etc.) of the space station
* CubeSat experimental design based on space station deployment

# Participants and Requirements

## 3.1 Participants

* Undergraduate and graduate students
* Researchers of relevant research institutions and enterprises

## **3.2 Registration**

Please register on the official website of the Contest (spaceexploration.bitgentian.com). If there is any problem with the online registration, please send Appendix 2 for your registration to the official email address: register@spaceexploration.cn, with the mail subject “Registration+Abbreviated Organization Name +Team Name”.

## **3.3 Requirements**

The number of registered teams from each organization is unlimited. Each team is composed of no more than 7 persons, including maximally 5 students and 2 supervisors.

## **3.4 Contest**

There are two phases in the contest, including preliminary contest held online and final contest held on site. Participating teams are ranked by score in both phases based on results and performance in the contest.

## **3.5 Finalist Teams：**

The total number of teams in the final will not exceed 30.

## **3.6 Expenses**

Local expenses (accommodation, food and other related expenses) during the final in Beijing will be covered by the host of the event, Beijing Institute of Technology, and the participating teams will bear their own travel expenses.

# Time Schedule

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| --- | --- |
| Events  | Date |
| Opening the Contest and/or Summer Camp registration | April 06, 2020 |
| Deadline of the Contest and/or Summer Camp registration | June 12, 2020 |
| Deadline of submitting works for the preliminary contest | June 15, 2020 |
| Announcement on the teams in the Final | Second half of June, 2020 |
| Final contest | Second half of August, 2020 |
| Summer Camp | Second half of August, 2020 |

**Note: Works for the final contest and summer camp may be reviewed online due to the public health concern raised by the spread of the coronovirus.**

# Participation and Scoring Rules

All the submitted works for the contest shall be scientific, innovative and completed according to the requested time schedule. Submission requirements are as follows.

## 5.1 Submission Requirements for the Preliminary Contest

1. An extended abstract within 1500 words in English (including project overview, pictures, and basic scheme etc.) shall be submitted for the preliminary contest. Design schemes completed by Auto CAD, PRO-E and other software, pictures in JPG format, full-text reports, etc. can be submitted as supplementary materials. The submitted materials shall follow the template in Appendix 3 in the format of PDF and supplementary materials shall be packaged in the file folder when being submitted.
2. Introduction to the team member shall be made in the format of PDF according to the template in Appendix 4.
3. All the materials should be submitted to the mailbox: register@spaceexploration.cn, with the mail subject: Works+ ‘Abbreviated Organization Name’+‘Team Name’+‘Name of the works’

## 5.2 Requirements for the Final Contest

1. The teams of the final contest will be notified by email and the Contest website. Teams in the final list shall submit all files including posters in English, full-text reports, simulation results and drawings in e-version, and real objects/models, and other supplementary materials if needed. Each finalist team shall make a 15-minute presentation about its work and attend a 10-minute Q&A session. Both the presentation and Q&A will be in English. Submission requirements for the final contest will be announced by email and the Contest Website.
2. Wiki pages on the Contest Website will be provided for each finalist team to present its work and introduce the teamwork for the research and development work. Each finalist team shall develop, display and maintain the wiki page timely according to the requirements. The design and content of the wiki page will be taken into the consideration for the final scores of each team..

## 5.3 Scoring Rules

The scoring is divided into two stages: online scoring in the preliminary stage and live scoring in the final stage. Innovative designs of space station experiment and Designs of space station payload experiment will be scored as two themes separately based on different technical emphasis. For more details, please see Appendix 5.

## 5.4 Dispute Settlement

Any team that disagrees with the score shall make the appeal to the Organizing Committee for arbitration. The results of the arbitration will be sent to the participating teams via E-mail within five working days after the application.

# Awards

The number of winning teams in the final contest will be determined by the score. The awards will be set as First, Second, Third and Special Awards based on the works and overall performance. The bonus will be given to the winners as follows:

First prize: above 95 points out of 100 (can be vacant), 25000 RMB

Second prize: 90-94 points out of 100, 15000 RMB

Third prize: 80-89 points out of 100, 10000 RMB

Special award: 5000 RMB

First-prize winners will possibly be offered the opportunity to launch the works with the China space station or other international space stations for free.

# 7. Special statement

7.1 Works submitted shall not infringe others’ intellectual property rights.

7.2 The intellectual property right of the submitted works belongs to the participants. The Organizing Committee of the Contest has the right to edit, publish and promote the works for non-profit purposes. All teams participating in the contest shall be deemed to have confirmed and voluntarily abide by the agreement on intellectual property rights.

7.3 All submitted works shall not violate the relevant laws and regulations of both China and the countries where the participants are from. And the participating teams and individuals will be responsible for the consequences of violating legal issues by themselves.

7.4 Please contact the Organizing Committee for any questions arising from this notice（register@spaceexploration.cn）, and the right to the final explanations belongs to the Organizing Committee.

## Appendix 1: Technical Requirements

## Appendix 2: Registration Form

## Appendix 3: Work Templates for the Preliminary Contest

## Appendix 4: Template for Team Members Introduction

## Appendix 5: Scoring Rules