

HYPERGES

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Access to Space for All

HyperGES - Announcement of Opportunity







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About Us • Our Work • Space4SDGs • Information for • Events • Space Object Register • Documents • COPUOS 2023 • Our Work > Access to Space for All > Opportunities > Hypergravity/Microgravity Track HyperGES Rounds Our Work 3rd Round: from 31 May to 12 November 2023 Programme on Space Applications Press Release: UNOOSA and ESA open new round of applications to conduct hypergravity experiments (31 May 2023) UN-SPIDER 3RD ROUND SCHEDULE International Committee Opened for Application: 31 May 2023, see presentations/recordings of the event from here UN-Space Announcement of Opportunity webinar: Monday 26 June 2023 10:30 am and 4:30 pm Central European Summer Time (UTC+2). Register Space Law				
Our Work > Access to Space for All > Opportunities > Hypergravity/Microgravity Track Our Work HyperGES Rounds Secretariat of COPUOS 3rd Round: from 31 May to 12 November 2023 Programme on Space Press Release: UNOOSA and ESA open new round of applications to conduct hypergravity experiments (31 May 2023) UN-SPIDER 3RD ROUND SCHEDULE International Committee Opened for Application: 31 May 2023, see presentations/recordings of the event from here UN-Space Announcement of Opportunity webinar: Monday 26 June 2023 10:30 am and 4:30 pm Central European Summer Time (UTC+2). Register Space Law				
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Announcement of Opportunity webinar: Monday 26 June 2023 10:30 am and 4:30 pm Central European Summer Time (UTC+2). Register from here Space Law				
Deadline for submitting the Expression of Interest Form: 30 July 2023 23:59 Central European Summer Time (UTC+2) Benefits of Space				
Deadline for submitting the Application Form: 12 November 2023 23:59 Central European Time (UTC+1) Access to Space for All				
ANNOUNCEMENT OF OPPORTUNITY DOCUMENTS Partnerships				
 Announcement of Opportunity (.pdf) Expression of Interest form (.docx) Application Form template (.docx) Evaluation Table (.xlsx) 	rack			
REFERENCE MATERIALS Acknowledgement				
• ESA Large Diameter Centrifuge Summary Space Law for New Space • LDC Experimenter User Manual Space for Persons with • LDC Technical Constraints Space for Persons with • Examples of past experiments Disabilities • Webinar materials: See Hypergravity/Microgravity Webinar series here Space t/Verth	e Actors			



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January February March April May June July August September October November December January



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12. Eligibility Criteria

This Opportunity is open to entities located in developing economies and economies in transition that are Member States of the United Nations. Government organisations, research institutes, universities, other public and non-for-profit organisations are eligible to apply for this Opportunity.

To assess eligibility, UNOOSA and ESA will use the country classification list of developing economies and economies in transition indicated in the joint report, World Economic and Situation Prospects published by United Nations Department of Economic and Social Affairs and other related organisations: https://desapublications.un.org/file/1098/download

Entities located in countries that have not conducted research under space conditions at the time of the opening of this application are particularly encouraged to apply. Priority will be given to teams that have not previously participated in an experiment series and/or research projects that have never been conducted at the LDC facility.

Each team should consist of a team leader and up to three team members. The team leader must belong to the same entity as at least one of the team members. All team members must be from entities that are eligible to participate, and all participating entities must submit the Letter of Endorsement from their

entities' directors. The team leader shall be responsible for all matters related to the application and bear responsibility for the execution of the experiment. The teams could consist of several entities, with one leading entity that takes responsibility.

The teams may be larger, however, the financial support listed in Section 14 is applicable to one team leader and three team members only. The final number of team members who will participate in the experiment on site at the LDC facility depends on the requirements of the experiment and is subject to approval by the Selection Board of the HyperGES Fellowship Programme. The Board reserves the right to limit the team size if it deems necessary.

Changes to the composition of the team are NOT allowed once the application has been submitted. If, for exceptional reasons, changes are necessary, they will be subject to the approval of the Selection Board.

Teams are allowed and encouraged to partner with external entities that can support their development, even if those entities are not eligible themselves. These partnerships should be clearly written as "External Support" in the Application Form and external partners shall not be included in the team.





Entities = Government organisations, research institutes, universities, other public and non-for-profit organisations



Partnerships = Include in team if the partner is also an eligible entity, if not put them under "External Support"



The entire selection process will be performed in a single step.

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13. Selection Criteria

The Selection Board will consist of members nominated by UNOOSA and ESA. The Board will assess all applications against the following criteria:

(i) Experiment Content:

The educational, scientific and/or technological value of the proposed experiment and the relevance of the utilisation of the LDC facility, details of the experiments as well as the data acquisition and data analysis plan in the proposed experiment.

(ii) Team Composition:

The skills set, organisation, and composition of the team. The team shall demonstrate competence in scientific and technological research or in education as well as in project management. The team composition of proposals with the same score will be compared and the proposal with a larger number of women will be ranked higher.

(iii) Feasibility:

 General feasibility of the proposed experimental design and procedure, including data acquisition and data analysis plan, the work breakdown structure, the overall schedule credibility, and risk analysis.

Budget plan to support the development, preparation, transportation, and shipping of the
experiment, as well as the availability of funds.

(iv) Outreach:

The communication and dissemination plan for outreach activities to promote capacity-building and STEM education, clearly linking the project with the Sustainable Development Goals of the United Nations 2030 Agenda on Sustainable Development. For more information about the SDGs: <u>https://sdgs.un.org/</u>













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14. Financial and Technical Support

1) International air tickets

The awardee will be offered the most economical round-trip air tickets for up to four persons between the participants' international airport of departure and Amsterdam (close to Noordwijk), the Netherlands. Participants are responsible for any en-route expenses or flight changes.

2) Technical support and local accommodation

The use of the LDC facility is sponsored by ESA. ESA will be in charge of and operate the LDC facility and support the awardee including their preparation and on-site integration. In addition, ESA will provide scientific and technical consulting, service, and support to the awardee for smoothly completing the experiment cycle.

ESA will offer local hotel rooms and meals free of charge for up to four persons during the on-site integration and experiment series in Noordwijk, the Netherlands.

3) Experiment preparation and other costs

UNOOSA and ESA will neither bear the expenses related to the preparation, transportation, shipping, nor the insurance of the experiment or of the team members. The awardee must cover these costs.

UNOOSA



Round-trip tickets for 1 Team Leader and 3 Team Members

ESA

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- Technical support onsite
- € Costs related to the use of the facility

Awardee Team

- All costs related to the preparation, development, transportation, shipping, insurance, outreach activities etc.



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15. Publications

The awardee is requested to inform UNOOSA and ESA of any publications related to this experiment including PhD, Master thesis, publications in journals, and conference or workshop proceedings and presentations. The awardee is requested to include the following sentence in their peer-reviewed publications, contributions to congresses, and other forms of written dissemination:

The authors would like to thank the United Nations Office for Outer Space Affairs and the European Space Agency (ESA) for the Access to Space for All initiative: HyperGES opportunity for their support in enabling the utilization of ESA's Large Diameter Centrifuge Facility.

-Ý This is for the entire "Outreach and Publication" Phase



Access to Space for All HyperGES - Expression of Interest Form



Who should fill in this <u>Expression of Interest</u>?

- Eligible teams
- Teams that have an experiment idea and would like to obtain guidance on how to materialize it.

What should you do in the form?

- Describe briefly your intended experiment;
- Use clear language or graphs/tables;
- Do not exceed <u>one</u> page.

-`**Q**́- Tips

- It is not Mandatory.
- Read documents first.
- Submit in time!



Chapter 1: Basic Information

- 1.1 Project Title [Mandatory]
- 1.2 Executive Summary: (no more than 150 words) [Mandatory]
 - Please summarize sections 4, 6, 7, and 8.
 - 4. experiment objectives and expected outcomes
 - 6. Planning
 - 7. Budget
 - 8. Communication and dissemination plan
- 1.3 Certificate [Mandatory]
- 1.4 Head of Applying Organization Information [Mandatory]



-̈́Qू- Summarize

- why you chose to perform this experiment
- what are expected outcomes
- why your experiment is unique
- your plan

-Ò́C Besides the Certificate, a Letter of Endorsement is also required from each applying entity.





Chapter 2: Team Composition

2.1 Team Leader [Mandatory]

The team leader must belong to the same entity as at least one of the team members. The team leader shall be responsible for all matters related to the application and bear responsibility for the execution of the experiment.

2.2 Team Member(s) [Mandatory]

All team members must be from entities that are **Eligible To Participate** and all participating entities must submit the <u>Letter of Endorsement</u> from their entities' directors.

2.3 Description of Cooperation/External Support [Optional] If it is a joint proposal from several entities, please describe the role and responsibilities of each entity. If you receive support from external organizations or individuals, please list them here.





Chapter 3: Technical Abstract

3 Proposal Technical Abstract [Mandatory]

Please describe the proposed experiment, including the science/technology rationale, the relevance of utilizing the Large Diameter Centrifuge (LDC) facility, and the expected results. The abstract should concisely describe the above in a maximum of **300 words**.

Q-Summarize

- why you chose to perform this experiment
- how the hypergravity environment helps your experiment
- what are the expected outcomes





Chapter 4: Experiment Objectives and Expected Outcomes

4.1 Experiment Rationale [Mandatory]

The scientific and technical or educational value of the proposed experiment; the theoretical basis; the hypothesis on the effect of hypergravity; evidence or data from (international, peer-reviewed) publications and your observations to support your hypothesis.

Q-Clearly state:

- your experimental rationale,
- how the experiment is going to support the research
- why are you thinking the hypothesis is reasonable.



Example:

Study on the influence of centrifugal force on the magnetic field of maglev equipment

- Maglev trains use magnetism to levitate trains on tracks;
- Maglev train that enters a curve at high speed will be subjected to a centrifugal force of about several G;
- It is assumed that hypergravity causes changes in the magnetic field;





4.2 Experiment Objectives [Mandatory]

Please list the objectives of the proposed experiment, please use SMART criteria (Specific, Measurable, Achievable, Realistic, Time-bounded) to define the objectives. Objectives shall be numbered as Obj-XXX (e.g. Obj-001, Obj-002...) ⁻Q⁻ Clearly state: Experimental objectives

- **S**pecific
- **M**easurable
- Achievable
- **R**ealistic
- **T**ime-bounded



Example:

. . .

Experiment Objectives: Obj-001: Measure the magnetic field distribution near the maglev device before the experiment; Obj-002: Measure the magnetic field distribution near the maglev device at 3G, 5G and 10G;





4.3 Foreseen Outcomes [Mandatory]

Please insert a description of the specific outcomes of the experiment with a maximum of **150 words**.



Example:

Foreseen Outcomes: Equipment used to simulate a maglev train deflects under the influence of hypergravity, causing changes in the magnetic field. \dot{Q} -Clearly state:

- the possible effects of hypergravity on the experiment;
- the expected results
 - directly observed;
 - through data and/or sample analysis after the experiment.

4.4 Novelty, Uniqueness, and Possible Evolutions [Mandatory] Describe why the proposed experiment is new and unique, including how it differs from similar experiments conducted using the microgravity environment (if applicable), in a maximum of 150 words.

-Ý Why is your experiment special?





Chapter 5: Experiment Specifications and Description

5.1 Main Specifications [Mandatory]

You can use graphs and tables for some items such as the below

Table 5.1. Experiment main specifications

Parameter	Values	Units
	00	
Mass	20	kg
Maximum Dimensions	300 x 300 x 300	mm









5.2 Expected Experiment Environment & Conditions [Mandatory] Describe the experimental environment or conditions required for the proposed experiment, such as the **desired gravity condition**, and the duration that the equipment will be exposed to that gravity environment. Please read ESA Large Diameter Centrifuge summary and technical constraints to see the parameters available for the experiment.

https://esamultimedia.esa.int/docs/edu/Forms_Letters/SYT/L

DC_summary.pdf

https://www.esa.int/Education/Spin_Your_Thesis/Technical_c

onstraints

https://esamultimedia.esa.int/docs/edu/LDC_Experimenter_ User_manual_V.3_Rev.0_14-May-2019_ESA-TECMMG-MAN-014129.pdf

ČÝ Clarify:

- which G-environment and how long you want to use;
- How many gondolas you want to use;
- any other specific conditions.

READ the user manual







5.3 Design Requirements [Mandatory]

Please describe the design requirements of the experimental setup, including samples, control equipment, data acquisition equipment, etc. Note that the requirements have to be verifiable and compatible with what is stated in LDC Experimenter Users Manual at its latest version. Requirements shall be numbered as Req-XXX (e.g. Req-001, Req-002...).

Example:

Req-001: the temperature inside the equipment can maintain -196°C; Req-002: the equipment shall be made of aluminum; Req-003: Power supply of the equipment: 24V DC 3A; -Q- List the design requirements for your equipment, then we will know whether your experiment is feasible.







5.4 Experiment Design Definition [Mandatory]

Please use block diagrams and descriptive text to explain all equipment for the proposed experiments. If there is a control group as part of the experiment, please describe it together. Ú- Use block diagrams to help us and yourself understand the experiment design.







5.5 Experiment Materials [Optional]

Please list the materials to be used in the experiment as comprehensively as possible, especially if the proposed experiment is for biological samples, please list the samples to be used.





5.6 Experiment Procedure [Mandatory]

Please use a block diagram or flowchart and descriptive text to explain the method and procedure of the proposed experiment.





5.7 Data Acquisition System [Mandatory]

Please describe the method of acquiring data in the proposed experiment and the equipment used to access the data. Please clarify whether the team has access to all the equipment. And if not, whether the team intends to realize the data acquisition through external cooperation and procurement. Remember the Experiment Objectives?
 We asked for the measurable objectives, here we want to see how will you measure them.











5.8 Data Analysis Scheme [Mandatory]

Please describe the method of data analysis and the equipment required. Please clarify whether the team has access to all the equipment. And if not, whether the team intends to realize the data analysis through external cooperation and procurement.

5.9 Verification Criteria [Mandatory]

Describe how the results of the experiment will verify the objectives of Paragraph 4.2, with the related verification method, and how to determine whether the experiment is

successful.



- Ž-Clearly state;

- how will you analyse the data?
- Do you have all the equipment you need to analyse?







5.10 Current Status of the Proposed Experiment **[Optional]** Please describe the work your team has already done for the proposed experiment, including theoretical findings, experimental equipment development, and preparation.

Either you already have a laboratory and have done some research Or you will start with a good idea and a team of ambitious people



-Žý-If you have already started work on the experiment;

- what have you already done?
- what is the current status?





Chapter 6: Planning

6.1 Development Schedule [Mandatory]

Please provide a tentative schedule to develop and perform the proposed experiment. The development schedule shall include all phases starting from the kick-off meeting to the submission of the final report and clarify the <u>critical path</u>. A Gantt chart and a description shall be included. ♀ The critical path is the longest path (in time) from Start to Finish; it indicates the minimum time necessary to complete the entire project.









6.2 On-site Integration and Experiment Schedule [Mandatory] Please provide a tentative schedule for all activities that take place in ESTEC/Noordwijk within a maximum of <u>two weeks</u>.

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Week #		Week 1						Week 2						
Task 1														
Task 2														
Task 3														
Task 4														
Task 5														
Task 6														





6.3 Work Breakdown Structure [Mandatory]

Please include the Work Breakdown Structure for the design, development, testing, and all other activities required until the experiment has been completed, including the outreach activities. In case of partnerships, please indicate the share of the work among the partners/team members for the different work packages.

Task

Task

Task

Task Descriptio

Descriptio

Descriptio

Descriptio









6.4 International Transportation Plan [Mandatory]

Please provide information concerning the transportation of the equipment, and customs arrangements (if applicable).



-Ò́g-Sending experiments and samples are more complicated than you think...

<u>Check customs for both your</u> <u>country and Netherlands</u>

- What documents do you need to prepare?
- How long it will take?

Plan the shipment in advance!

https://www.belastingdi enst.nl/wps/wcm/conne ct/en/customs/customs



Chapter 7: Budget

7.1 Budget Plan [Mandatory]

Please provide information on the cost, including the price of the parts, personnel costs, facilities costs, operation costs, travel expenses, shipment of the equipment, and dissemination activities.

Evampla	@+	1	For Product Development Cycle 2.0	Version 1.0	Version 2.0	(+/-)	%Change	Comments/ Assumptions
Example.			Personnel Expenses					
			Full-time Salaries	\$564.000	\$683.000	\$78.000	12%	Text Here
			Temporary Workers	\$47.000	\$58.000	\$15.000	25%	Text Here
			Consultants	\$1.200	\$0	-\$1.300	-110%	Text Here
			Outsourcing Contracts	\$22.000	\$16.900	-\$6.100	-24%	Text Here
			Training/Seminars	\$1.400	\$2.000	\$1.400	120%	Text Here
			Travel (E.G. Plan Tickets)	\$2.000	\$5.000	\$1.400	35%	Text Here
			Accommodation (E.G. Hotels)	\$2.000	\$4.000	\$1.000	28%	Text Here
		a	Total Person Expenses	\$749.500	\$771.900	\$92.400	16%	
	() ×	0=	Marketing Expenses		1			
			Online Advertising	\$18.000	\$24.000	\$8.000	35%	Text Here
			Print Advertising	\$35.000	\$48.000	\$5.000	27%	Text Here
			Events Tradeshow Sponsorships	\$32.000	\$26.000	-\$20.000	-23%	Text Here
			Marketing Collateral	\$2.000	\$3.500	\$.600	17%	Text Here
			Prospect List	\$8.000	\$12.900	\$7.600	122%	Text Here
			Other	\$1.00	\$400	\$200	170%	Text Here
		-	Total Marketing Expenses	\$100.200	\$113.700	\$13.500	13%	
	*	ł	Production Expenses					
			Raw Materials	\$748.000	\$1.856.789	\$684.789	95%	Text Here
			Equipment	\$275.000	\$200,800	-\$144,200	53%	Text Here
			Training	\$28.000	\$275.700	\$11.700	48%	Text Here
			Total Production Expenses	\$1,028,000	\$1.523.289	\$586,500	65%	
	*		Softwara Exponence				Contraction of the Contraction o	
	The second se		Design Application	\$26.500	\$37.000	\$6.800	27%	Tavt Hara
			Design Application	520.500	537.000	30.000	2170	Text Here
			Production management Application	\$21.000	\$24.000	35.500	29%	Text Here
			Other Applications	\$2.600	\$2.400	-\$300	-18%	Text Here
	-	-	Total Production Expenses	\$62.400	\$66.500	\$12.100	25%	
	@>	5	Total Expenses	\$1.929.100	\$2.702.389	\$873.289	28%	Text Here





Financial Support

- UNOOSA and ESA will pay for international air tickets and accommodations for up to 4 people.
- Applicants shall cover all costs related to the preparation, development, transportation, shipping, insurance, outreach activities, and extra personnel if applicable.





7.2 Budget Source and <u>Expected</u> Budget Source [Mandatory] Please provide information on the secured budget (committed budget), specifying the funding source, and information on the envisaged funding sources of any remaining budget.







Chapter 8: Communications and Dissemination Plan

8.1 Communications and Dissemination Plan [Mandatory] Provide the plan (e.g. scope, schedule, resources, means) that will be used to promote the experiment and its results, as well as communication towards the general public. Specific activities shall be organised within the applicant country(ies).



Session 4: Effective Outreach Presentations on successful examples and discussion on how to conduct effective outreach activities Presentations and Videos are available!

🔆 Summarize

- What kind of outreach activity you will do to enhance the outcomes of your project?
- Who is your target audience?
- What is the timeframe for the different outreach activities you have planned
- What resources/platforms will you use?





https://www.unoosa.org/oosa/en/ourwork/psa/schedule/2023/accspace4all-expert-meeting.html





8.2 Relevance to the Sustainable Development Goals [Mandatory] Please describe what Sustainable Development Goals (SDGs) are supported by the experiment and its associated results. Please indicate how the participation in the AO and its related activities contribute to progress on one or several Sustainable Development Goals in your country(ies) and the expected social impact. Note that HyperGES contributes to SDG 4 "Quality Education"; SDG 8 "Decent Work and Economic Growth" and SDG 9 "Industry, Innovation and Infrastructure".

Q⁻All of the 17 Goals each have

- Targets
- Indicators



Ensure healthy lives and promote well-being for all at all ages



By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births

Indicators 🔺

3.1.2

3.1.1 Maternal mortality ratio

Proportion of births attended by skilled health personnel

https://sdgs.un.org/







Access to Space for All initiative for Sustainability: Interview Series Article <u>1# How Bartolomeo x ClimCam Project Contributes to the SDGs</u> <u>2# How Education Through PNST Contributes to the SDGs</u> <u>3# DropTES: The Stepping Stone into Space Activities and its Contribution</u> <u>to the SDGs</u> <u>4# DropTES: The Opportunity to Expand Your Horizon and its contribution</u> <u>to the SDGs</u>

5# PHI: The Platform to Realize Your Dreams

For more Access to Space for All Awardees' stories, visit:

https://www.unoosa.org/oosa/en/ourwork/access2space4all/Awardees.html





6 CLEAN WATER AND SANITATION

3 GOOD HEALTH AND WELL-BEING









Chapter 9: Risk Analysis

9 Risk Analysis [Mandatory]

• Brainstorm to find out every risk that may occur and affect your experiment.

Please use a risk matrix to describe the risks that you might face. These should include technical risks (e.g. mechanical, chemical, thermal, biological radiation, etc.), planning risks and budget risks. Please assess their likelihood of occurrence 1 (not likely) to 3 (very likely), and their impact (1 (minor impact) to 3 (catastrophic) and mitigation actions for each of them.

Example:

- Your laboratory didn't finish the equipment in time.
- Part of your budget has been reallocated to another project in the middle of your project.
- You lost your luggage at the airport.









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Access to Space for All Opportunities







