Four teams selected for CAN-RGX 2023-24

December 18, 2023

Toronto, ON: Students for the Exploration and Development of Space (SEDS-Canada) has selected the four teams among a pool of applications for the 2023-24 Canadian Reduced Gravity Experiment Design Challenge (CAN-RGX). The competition challenged post-secondary students attending Canadian universities and colleges to submit a proposal for a small scientific payload to be tested onboard the National Research Council of Canada's (NRC) Falcon 20 research aircraft, capable of simulating reduced gravity environments, similar to those found in the International Space Station.

Two students per team will get to fly onboard the aircraft as Mission Specialists to operate their experiments. Each flight will consist of 12 parabolic maneuvers to allow students to run their experiments and collect all the necessary data for subsequent analysis on the ground. The Falcon 20 is one of the world's best microgravity planes; it provides the closest environment to that of real zero gravity. Each parabola will provide up to 20 seconds of near zero-G. As the NRC's primary research aircraft, the Falcon 20 is capable of helping the next generation of researchers realize their future potential in the space sector. With support from the NRC and the Canadian Space Agency (CSA), CAN-RGX is the only competition of its kind in Canada.

The selected teams are:

- **CMD-SAT:** The team from the University of Alberta will study the behaviour of compliant hinges in microgravity environments. CMD-SAT will be studying the moment of inertia, the angle at which it opens, and any parasitic motion of the compliant hinge in microgravity. Each hinge will be subjected to thermal cycling and stowage to see how they will react. The team aims to employ this kind of hinge design for AlbertaSat's upcoming satellite mission.

  [Team media contact: Emma Van de Venter, evandeve@ualberta.ca]

- **SAIT Supernovas:** The goal of this team from Southern Alberta Institute of Technology (SAIT) is to investigate the behaviour of an unmanned, electrically powered craft in microgravity. The team will study the maneuvering abilities of the craft while traveling at both low and high speeds, propelled using electrohydrodynamic ion thrusters and stabilized using a mechanical and digital gyroscope. The goal of the project is to further the development of a vehicle that can be used for various applications in outer space.

  [Team media contact: Samuel Relja, samuel.relja@edu.sait.ca]

- **Team Insecta:** The Carleton University based team will study the effects of microgravity on edible crickets, which can be used as a source of nutrition in deep space missions. Their novel experiments will analyze cricket immune response, viral loads, and performance traits after exposure to microgravity. The team will also use antivirals (valacyclovir) to try to mitigate stress induced immune responses. Our results will provide a comprehensive dataset to help pioneer insect astro-farming research.

  [Team media contact: Hunter Brzezinski, hunterbrzezinski@cmail.carleton.ca]

- **Waterloo Space Soldering Team:** This project of the team from University of Waterloo aims to test whether solder joints formed in microgravity can be improved using a centrifuge, a device commonly used in microgravity experiments to simulate Earth's gravity. The team has hypothesized that soldering within a centrifuge will recreate Earth's gravity conditions, resulting in solder joints with reduced porosity and improved quality. The goal of the research is to devise a method to improve the quality of in-space solder joints to allow replacements of electrical components in long-duration space missions.

  [Team media contact: Megan Chang, m56chang@uwaterloo.ca]

The four teams must now complete the Preliminary Design Review, which they will present to a panel of judges including experts in microgravity sciences from CAN-RGX's collaborating agencies, including the NRC and the CSA. After finalizing their designs, the teams will build their experiments in order to submit the next milestone, the Critical Design Review.

-x-

About SEDS-Canada

SEDS-Canada is a national, student-run, non-profit committed to supporting and empowering students interested in space, advancing the Canadian space sector, and advocating for peaceful exploration and development of space.

Join us as an industry partner! Please contact us for sponsorship opportunities.

Follow us on social media!
Twitter: @sedscanada
Facebook: facebook.com/sedscanada
Instagram: @sedscanada

CAN-RGX Media Contacts:
Connor Mcneill
Projects Chair
connor.mcneill@seds.ca

Louis Burelle
CAN-RGX Project Manager
louis.burelle@seds.ca