

Mechanical Gravity-Offset as a Low-Cost Testbed for Human Researchers and Test Subjects

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The International Institute for Astronautical Sciences (IIAS) maintains three facilities for reduced gravity research and education activities: parabolic flight, neutral buoyancy, and gravity-offset. IIAS's gravity offset laboratory is a two-axis system located in Melbourne, FL and was developed for the purpose of space suit test and evaluation and general education. This facility can simulate gravity levels from zero-G to 1G and can support horizontal translation for 25 feet (8m) along a bed of simulated regolith or along structures that can be used to simulate microgravity operations. In 2019, IIAS completed

its first campaign to mature a variety of space technologies, including a prototype EVA space suit. Today, the facility has broad applications for both human-factors research and for the maturation of space technologies and also for the training of operators that will work in the microgravity environment, including suborbital flight researchers and human test subjects. Additionally, IIAS uses the gravity-offset laboratory to support immersive educational programs in EVA space suit operations, EVA space suit test and evaluation, and in space life sciences.



Figure Insert: Evaluating prototype space suit in lunar gravity