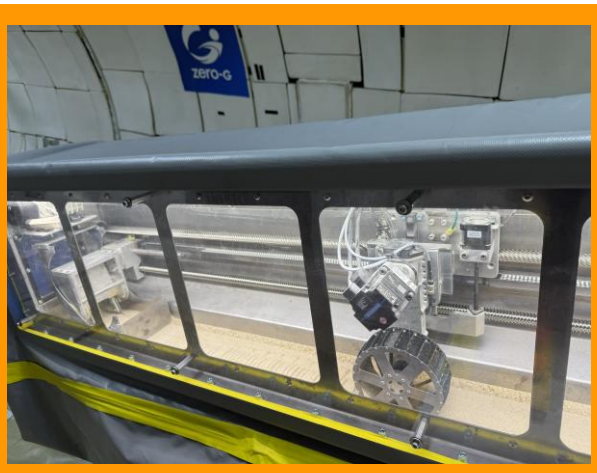
PROTOINNOVATIONS
REDUCED GRAVITY SINGLE-WHEEL TESTBED



Capabilities

- Fits Ø150mm - Ø190mm wheels (customization for more range may be possible)
- Speeds up to 27 cm/s
- Wheel loads from 3 to 10 kgf
- 1.5 m of operating length
- Reconfigurable touch screen HMI with push-button operation
- Redundant ESTOP buttons
- Tilt up to 20° in half degree increments
- Windows along the HMI-facing side, top, and end length.
- 84” L x 44” W x 57.9” H deployed dimensions
    - 11.1 sq. ft. base plate
- 6.56A @ 115 VAC (Nominal) with a standard 120VAC outlet

Environment

- Tested on Zero-G lunar gravity flight with LSP-2 and GRC-1 simulants. Contains up to 135 kg of simulant.
- ~300 kg structural mass
- Simulant containment ensure respiratory protection
- Testbed also functional in Earth-G

Data

- All data recorded at 500 Hz
- Torque cell measuring up to 2.3 Nm at ± 0.014 Nm
- Wheel axis position sensors:
    - Vertical Z position accuracy ± 0.017”
    - Horizontal X position accuracy ± 0.039”
- Two 3-axis accelerometers
    - One on tilted housing
    - One wheel carriage
    - ±2g dynamic range