

MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)
Facilities and Operations of Microgravity Experiments (5)

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NEW MICROGRAVITY AND HYPERGRAVITY FACILITY IN THE CZECH REPUBLIC

Abstract

A new facility for microgravity and hypergravity education and research is being finished at the Czech Technical University in Prague campus. The facility consists of a drop tower and a centrifuge. Both facilities are designed as low-cost and they use COTS components as much as possible. The drop tower uses an abandoned chimney with drop height of about 25 meters and corresponding free-fall time of over 2 seconds. Use of drag shield reduces the aerodynamic forces in order to produce low gravity level conditions with residual acceleration $\sim 10^{-4}$ g. The 5-meter diameter centrifuge with maximum acceleration up to 8 g is a second part of the facility.

The experimental container/capsule is shared for the drop tower and the centrifuge. Currently, educational and small (~ 5 kg) research experiments can be accommodated. The container is equipped with independent power source, sensors, cameras and programmable control and data acquisition system. Sharing of the container with unified interfaces enables easy preparation and accommodation of the same experiment in both facilities and performing an experimental campaign from 10^{-4} g up to 8 g. The facility is integrated into the education and provides a valuable hands-on experience with changed gravity conditions for the students. Due to low operating costs, it is open also for educational and research proposals from other institutions.

The project was supported by internal grant programme RPMT2016 of the Czech Technical University in Prague and by Ministry of Education, Youth and Sports of the Czech Republic (grant no. LE14005).