

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

Author: Dr. Thorben Koenemann
ZARM Fab GmbH, Germany, thorben.koenemann@zarm.uni-bremen.de

MICROGRAVITY EXPERIMENT PROGRAMS FOR STUDENTS AT THE BREMEN DROP TOWER

Abstract

The Center of Applied Space Technology and Microgravity (ZARM) founded by Prof. Dr.-Ing. Hans J. Rath in 1985 is part of the Department of Production Engineering at the University of Bremen, Germany. ZARM established as a research center and currently headed by Prof. Dr. Claus Lämmerzahl is mainly concentrated on fundamental investigations of gravitational and space-related phenomena under conditions of weightlessness as well as questions and developments related to technologies for space. At ZARM more than 70 scientists, engineers and administrative staff as well as many students from different departments are employed. Today, ZARM is still one of the largest and most important university institutes for space sciences and technologies in Europe as well as worldwide well known in the space community. With a height of 146 m the Bremen Drop Tower is the predominant facility of ZARM and also the only drop tower of its class in Europe. ZARM's ground-based laboratory offers the opportunity for daily short-term experiments under conditions of high-quality weightlessness at a level of 10^{-6} g (microgravity). The provided quality is one of the purest for experiments under weightlessness worldwide achieved. The scientists may choose between a single drop experiment with 4.74 s in simple free fall and a catapult experiment with 9.3 s of weightlessness. Either in the drop or in the worldwide unique catapult operation routine the repetition rates of microgravity experiments at ZARM are always the same, generally up to 3 times per day. Since the start of operation of the facility in 1990, over 6750 launches of more than 160 different experiment types from various scientific fields like Fundamental Physics, Combustion, Fluid Dynamics, Planetary Formation / Astrophysics, Biology and Materials Sciences have been successfully accomplished so far. In our paper we will report and inform about microgravity experiment programs for students like Drop Your Thesis!“ by ESA and our new program DropTES“ by UNOOSA / DLR taking place at the Bremen Drop Tower. We will also present our involvement in the sounding rocket student program REXUS / BEXUS“ by DLR / SNSB.