

## **THE LOW TEMPERATURE MICROGRAVITY PHYSICS FACILITY (LTMPF)**

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The Jet Propulsion Laboratory (JPL) is building the Low Temperature Microgravity Physics Facility (LTMPF). The LTMPF is a self contained, reusable, cryogenic facility that will be attached to the Japanese Experiment Module (KIBO) Exposed Facility of the International Space Station. The LTMPF is a multiple user and multiple flight facility intended to provide a long duration low temperature environment on board the International Space Station. The Facility will provide a platform for breakthrough scientific investigations requiring both low temperatures and microgravity conditions. Two distinct primary experiment instruments will be accommodated during each mission. Secondary experiments are also planned during each mission utilizing the hardware built for the primary experiments. The Facility contains a 180-liter superfluid helium tank and electronics to measure and control temperatures. The LTMPF electronics include DC SQUID magnetometers that can be used to read magnetic-salt based high-resolution thermometers. The facility will be launched full of cryogen, and retrieved when the cryogen is depleted. JPL is working with several industrial and university partners to design and build the LTMPF. The partners for the dewar and instruments are Ball Aerospace and Technologies Corporation and Swales Aerospace respectively. The Principal-Investigators and their institutions have been contracted to develop the science instrument package. Detailed technical capabilities of the Facility will be presented, along with a brief description of the science investigations selected to fly on the first two missions.