

Prospects for Interdisciplinary Science aboard the International Space Station

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The assembly of the International Space Station was completed in early 2011, and is now embarking on its first year of the coming decade of use as a laboratory. Two key types of physical science research are enabled by ISS: studies of processes that are normally masked by gravity, and instruments that take advantage of its position as a powerful platform in orbit. The absence of buoyancy-driven convection enables experiments in diverse areas such as fluids near the critical point, Marangoni convection, combustion, and coarsening of metal alloys. The positioning of such a powerful platform in orbit with robotic transfer and instrument support also provides a unique alternative platform for astronomy and physics instruments. Some of the operating or planned instruments related to fundamental physics on the International Space Station include MAXI (Monitoring all-sky X-ray Instrument for ISS), the Alpha Magnetic Spectrometer, CALET (Calorimetric Electron Telescope), and ACES (Atomic Clock Experiment in Space). The presentation will conclude with an overview of pathways for funding different types of experiments from NASA funding to the ISS National Laboratory, and highlights of the streamlining of services to help scientists implement their experiments on ISS.