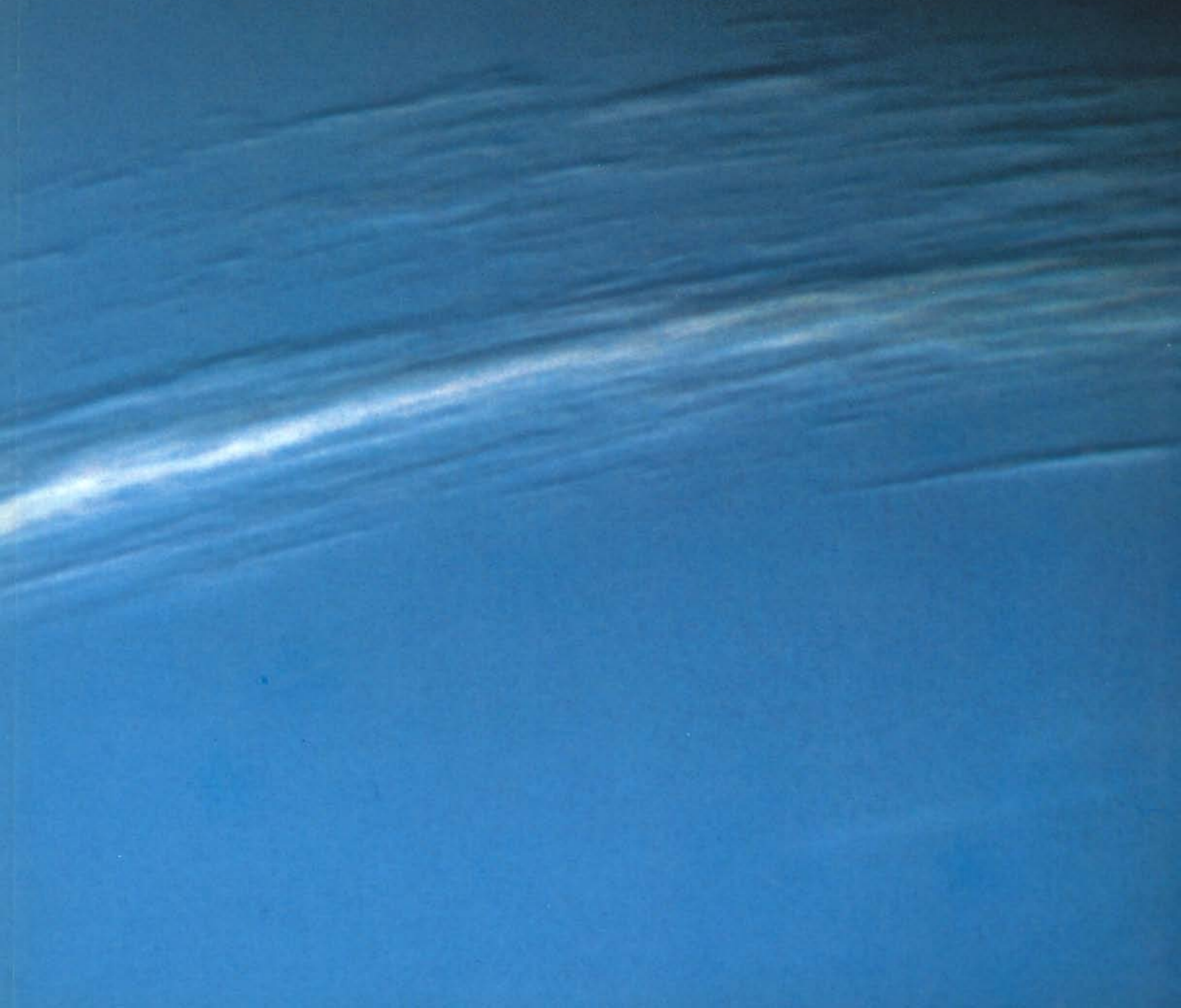


NASA

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NASA/University Technology Cooperation

Along with the broad educational activities exemplified on the previous pages, NASA is extensively engaged in cooperative technology development efforts with the nation's research universities. Such programs broaden the university's research capability, enhance education in space science and technology, and expand the nation's technology innovation base.

An example of NASA/university cooperation is the work of the Space Technology Center at the University of Kansas (KU) and the KU Center for Research, Inc. (CRINC). Directed by Professor Bill G. Barr, the Space Technology Center is one of 27 interdisciplinary centers established as part of a NASA plan to set up a network of advanced facilities across the nation. Since 1981, CRINC has been involved in a technology transfer program supported by the NASA Technology Utilization Division and by industry.

The objective of the technology transfer program is to encourage industrial innovation through utilization of NASA technology and through improved industry/university cooperation. At KU, such research is conducted by the Industrial Innovation Laboratory and the Computer Integrated Manufacturing Laboratory, which utilize graduate students in engineering and computer science as research assistants.

A new project of the Space Technology Center is one designed to advance NASA objectives in "augmented telerobotics." Unlike the robot, which is programmed to perform tasks autonomously, a telerobot is programmed to respond to commands from a human operator, or to mimic the movements of its human operator, for example, the operator moves arm-like controls and the telerobot's gripper-equipped arms move in the the same way. Remotely controlled telerobotic systems offer an alternative to exposing humans to such hazardous work as maintenance of nuclear power plants or high voltage transmission lines, or performing undersea maintenance on oil platforms.

The KU Space Technology Center will focus on "shared control" of telerobots such as those that will be employed in space station assembly and

operation. Shared control involves development of sensors, software and speech recognition techniques that can supply some of the control input, and thereby increase the system's capability by enabling the telerobot to do more jobs autonomously.

The project is being conducted under the guidance of Langley Research Center's Automation Technology Branch and is jointly funded by NASA, the Kansas Technology Enterprise Corporation and Kraft Telerobotics, Inc., Overland Park, Kansas. Kraft Telerobotics supplied a dual arm telerobot that has been installed in the Space Technology Center to test new sensor technology and computer software.



Professors Bill G. Barr (right) and Terry Faddis, co-directors of the University of Kansas Space Technology Center's telerobot advancement project, study their telerobot's performance.



University of Kansas graduate students work as research assistants in the telerobotics technology development effort.