

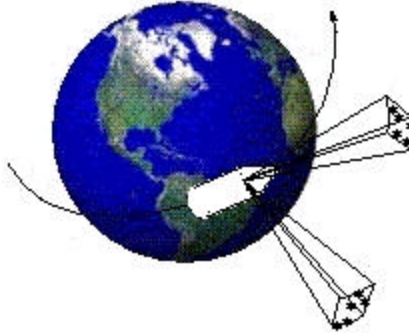


American Institute of Aeronautics and Astronautics

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“Lunch and Learn”



Astrodynamics Technical Committee
presents

StarNav-1 Experiment on STS-107

by

Dr. Thomas C. Pollock/Texas A&M University

Date: December 19, 2003 (Friday)
Time: Noon - 1:00 pm
Place: JSC Building 16, Conference Room 113

Please join us, bring your lunch and a friend, and listen to Dr. Pollock's presentation

StarNav began with a project, led by professors John Junkins and Tom Pollock, in the aerospace engineering department at Texas A&M University. StarNav pinpoints stars as reference points to determine the attitude and position of a spacecraft. The device takes pictures of stars, matches them with a star catalog, and then uses those pictures to identify in which direction the craft — in this case, Columbia — is pointed. If the StarNav experiment on STS-107 proves its mettle, spacecraft could one day navigate autonomously, without human intervention. StarNav is relatively small, roughly the size of a shoebox, weighs much less than conventional star trackers, and when commercialized, is expected to retail for perhaps half the \$1 million per-unit cost of conventional navigation devices. There are particular challenges putting together a tracking camera that will perform well while holding up to the harsh environment of space. Special kinds of thermally stable steel were used to hold the lenses in place, and care was taken to isolate the interior microprocessors to protect them from the vibration of launch. Plastic components were coated to resist off-gassing — in the absence of atmospheric pressure, organic compounds will evaporate into space — and copper wiring was installed to channel heat to cooler areas. Two StarNav versions are under development. StarNav-1 flew on STS-107, and an upgraded successor version, StarNav-2, is slated to fly on a NASA Earth-observing satellite scheduled for launch in late 2004.

Dr. Pollock is an Associate Professor of engineering at Texas A&M University. His educational background includes Virginia Polytechnic Institute, B.S., 1971, University of Virginia, M.S., 1974, and University of Virginia, Ph.D., 1977. His areas of interest include materials properties and structural design.

This event is open to the public, all are welcome. AIAA membership is not required. If you plan to attend, please get in touch with Al Jackson at 281-483-5037 or aajackso@ems.jsc.nasa.gov and leave your contact information. ***Please contact Dr. Jackson in advance if you require JSC badging (3 days for citizens, 2.5 - 3 weeks for non-citizens).***