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Sanders, John

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## **NPS Astronautics Professor Receives Menneken Research Award**

Associate Prof. Michael Ross will receive the Carl E. and Jessie W. Menneken Award for Excellence in Scientific Research next week during graduation ceremonies at the Naval Postgraduate School. Ross becomes the 14<sup>th</sup> recipient of the university's prestigious research award, which was established in 1988 through a gift to the NPS Foundation.

An aeronautics & astronautics professor, Ross and his students developed a software program for rapid simulation and visualization of guided aeroassisted maneuvers. Called ACAPS, "the simulation tool allows mission planners to rapidly simulate spacecraft trajectories assisted by atmospheric forces such as aerobraking and aerocapture," Ross said. Sponsored by the California Institute of Technology Jet Propulsion Laboratory (JPL), the software has been used by JPL to conduct high-level mission design studies for missions to Mars, Venus and Neptune.

Ross has been the principal investigator for 14 externally funded research projects at NPS since 1995, including six DOD projects. He has received four departmental research and meritorious teaching awards.

A current research initiative -- a collaborative project with NPS mathematics Prof. Fariba Fahroo -- has resulted in new, more efficient numerical techniques to solve complex optimal control problems. Based on an emerging pseudospectral method, "problems that were once considered difficult can now be solved routinely," he said. One implementation of the breakthrough pseudospectral method is a software program nicknamed DIDO, "after the Queen of Carthage, who was the first person to solve an optimization problem," Ross added.

DIDO has been used at the Charles Stark Draper Laboratory, the former Massachusetts Institute of Technology (MIT) Instrumentation Laboratory, to solve various problems in reentry trajectory design, launch vehicle guidance, low-thrust missions to Mars, and rapid

reorientation of spacecraft. NPS and MIT graduate students are now using DIDO to support thesis research projects.

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## **MENNEKEN AWARD**

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"We are furthering the theory and exploring ways this new approach can solve practical problems such as enhancing the mission of unmanned aerial vehicles like Globalhawk, spacecraft swarm formation design, and vibration control of flexible bodies," Ross said.

Prof. Carl E. Menneken joined the NPS faculty during World War II and became the institution's first dean of research in 1966. He and his wife, Jessie, were among the faculty, students, and staff who moved from Annapolis and Newport when the NPS campus was established in Monterey 50 years ago. For more information on the Menneken Award, see [HYPERLINK](#)

"<http://www.nps.navy.mil/inps/images/05Faculty/MennekenAward.htm>"

<http://www.nps.navy.mil/inps/images/05Faculty/MennekenAward.htm>.

The graduation and awards ceremonies begin at 10:30 a.m. on Wednesday, Dec. 19, in King Hall Auditorium. Ross will be available for interviews following the graduation program.

Media are invited to attend the ceremonies.

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