

Astronauts install big magnet on space station

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By MARCIA DUNN, AP Aerospace Writer – Thu May 19, 7:02 pm ET

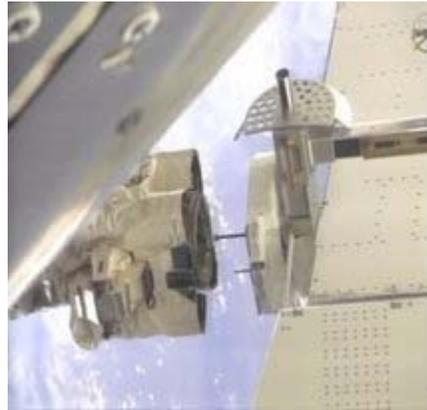
CAPE CANAVERAL, Fla. – Endeavour's astronauts accomplished the No. 1 objective of their mission Thursday, installing a \$2 billion cosmic ray detector on the International Space Station to scan the invisible universe for years to come.

But hours after astronauts finished that work, NASA said it might add one more job: a detailed inspection this weekend of a troublesome damaged thermal tile on the space shuttle's belly.

The space fliers used a pair of robot arms to remove the Alpha Magnetic Spectrometer from the shuttle, then hoist it onto the sprawling framework on the right side of the station. It marked the grand finale for America's role in the construction of the orbiting outpost, which began 13 years ago.

The instrument — which has a 3-foot magnet ring at its core — is the most expensive piece of equipment at the space station and certainly the most prominent scientific device. It will search for antimatter and dark matter for the rest of the life of the station, and hopefully help explain how the cosmos originated.

Nobel Laureate Samuel Ting, the principal investigator, personally relayed his thanks from Mission Control in Houston. He's worked on the project for 17 years and fought to get it on a shuttle, when its



AP – This image provided by NASA-TV shows the cosmic ray detector just prior to being attached to the International ...



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flight was suspended several years ago.

"This has been a very difficult experiment, and I think in the next 20 to 30 years, nobody will be able to do such a thing again," Ting told the astronauts. "I hope together with you, we will try to make a contribution to a better understanding of our universe."

Shuttle commander Mark Kelly — whose wife, Rep. Gabrielle Giffords, had surgery to repair her skull Wednesday — said he held his breath as the spectrometer was latched down.

"It's a \$2 billion cosmic particle detector, it's got 600 physicists that have been working on it ... and it was all in the hands of four of my crew members," Kelly said in an interview with The Associated Press. He said he told his crew afterward, "Isn't it a relief that it's no longer our responsibility, that we safely got it installed?"

As for his wife, Kelly said she's doing "really, really well, as good as possibly could be expected" following Wednesday's surgery in Houston, just two days after seeing her husband blast into orbit. Doctors put in a piece of mold plastic to replace part of her skull that was removed after she was wounded in the head in a Jan. 8 shooting rampage in Tucson, Ariz., that left six dead and 13 injured.

Kelly said he hoped to call Giffords later Thursday, using the space station's Internet phone. He spoke with his mother-in-law and identical twin astronaut brother Scott on Wednesday, and exchanged e-mails with his wife's neurosurgeon and chief of staff.

He took into orbit his wife's wedding ring; he's wearing it on a chain around his neck. He also has the

turquoise wristband he's worn for months — bearing the name "Gabby," a peace symbol and a heart. Some of the 11 other orbiting astronauts are wearing similar bracelets.

NASA engineers spent Thursday analyzing damage to seven spots on the shuttle's belly where thermal tiles were gouged and nicked during Monday's liftoff, the second-to-last for the shuttle program. They determined five, and probably a sixth, were no problem. But they weren't sure about one last one.

They have tentatively scheduled an unusual closer inspection Saturday of the gouge, which is about the size of a deck of cards. The shuttle astronauts would use a camera and a laser attached to a giant boom to examine the suspect tiles, said deputy shuttle program manager LeRoy Cain.

A similar gouge was found on a 2007 Endeavour flight — coincidentally commanded by Kelly's identical twin brother Scott — and it got the extra inspection, but was determined not to be a problem.

The damage was spotted in photos snapped by the space station crew just before Endeavour docked Wednesday. The shuttle performed a slow backflip for the cameras, a customary procedure put in place after shuttle Columbia disintegrated as it re-entered Earth's atmosphere in 2003.

Those photos are too fuzzy to make engineers comfortable that the heat shield is safe, Cain said. If there is a problem, spacewalking astronauts could fix it with a space version of a caulking gun or other patch kits.

Mark Kelly said he's being kept abreast of the developments and is not particularly concerned. On his 2006 shuttle flight, similar damage was detected and later cleared for re-entry, he said.

The 7-ton Alpha Magnetic Spectrometer, better known by its acronym AMS, may well vindicate the scientific purpose of the space station, according to astronauts, researchers and others.

"A science voyage of discovery into our galaxy and beyond has started today from the International Space Station," said Mark Sistilli, who's served as NASA's program manager for the spectrometer since 1994.

The international team of 600 scientists is led by Ting, a physicist at the Massachusetts Institute of Technology.

Weary after being up all night, Ting said Thursday afternoon that the spectrometer was turned on and gathering data within a couple hours of being installed, with thousands of particles passing through the magnet. Everything seems to be working perfectly, he said, but the checkout will continue for another few days before data collection begins in earnest.

The magnetic field generated by the precision instrument bends the path of incoming cosmic particles, and eight detectors attempt to identify them in the nanoseconds it takes to travel through the magnet.

Two astronauts — Gregory Chamitoff and Andrew Feustel — will venture out Friday on the first of four spacewalks to perform some station maintenance. On Saturday, the two crews will get an unprecedented VIP call — Pope Benedict XVI will make the first papal call to space. Two Italians are on board.

Endeavour will conclude its final voyage with a landing on June 1. NASA is shutting down its shuttle program this summer after 30 years, to focus on interplanetary travel. One more mission remains, by shuttle Atlantis in July, to carry up one last load of supplies and equipment.

Science writer Seth Borenstein contributed to this report from Houston.

Online:

NASA: <http://www.nasa.gov/shuttle>

Alpha Magnetic Spectrometer: <http://www.ams02.org/>

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