

UC SANTA BARBARA

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EUROPEAN SATELLITE TO CARRY UCSB PROJECT INTO SPACE

When the European XMM space observatory satellite blasts into orbit Dec. 10, 10 years of work by University of California, Santa Barbara scientists will go hurtling along with it.

The UCSB team, headed by physicist France Córdova, vice chancellor for research, designed a digital electronics module that will interpret data from one of the satellite's two telescopes.

The orbiting observatory is the product of the European Space Agency, a 14-country consortium that is Europe's equivalent of NASA. It will train its lenses on a variety of space phenomena, recording light emissions in the X-ray, ultraviolet and visible spectrums.

X-ray observations are the primary objective of the mission, said Córdova, hence the name of the project: XMM (X-ray multimirror mission).

The UCSB module is part of the UV/optical telescope that will support the X-ray observation efforts.

Britain's Mullard Space Science Laboratory was the lead partner in building this unit.

X-rays generated by other celestial bodies must be studied in space since they can't penetrate the earth's atmosphere.

"The main mission is to look at very far away sources of X-ray light," said Córdova, who will witness the launch at the ESA space center in French Guyana with her family.

"The secondary mission is to expand the spectrum to look at the optical and UV light from the sources.

"In that way, we feel we can understand more about them." Phenomena to be examined include quasars, pulsars and black holes, Córdova said.

The UCSB-designed module interprets data by taking photons captured by the optical telescope and using them to reconstruct the appearance of the object from whence they came,

said project manager and research physicist Timothy Sasseen.

"That's its main job," Sasseen said.

Córdova, then a staff scientist at the Los Alamos National Lab, was leader of a team that first proposed the technology to NASA in 1983 for inclusion on a Space Shuttle flight.

It wasn't selected.

"They liked the idea, but they said they didn't have the money," she said.

When the ESA asked for proposals in 1989, the team made its pitch again. This time, it was chosen.

The long wait has made next week's launch all the more exciting for Córdova.

"I can't believe it," she said. "It seems like I've always worked on this."

Córdova is no newcomer to space probes, having served as NASA's chief scientist from 1993 until coming to UCSB in 1996. Nonetheless, she admitted to a bit of pre-launch anxiety.

The XMM will be borne into space aboard a French Ariane 5 rocket, a relative rookie to space travel.

"This will be just the fourth launch of this rocket," Córdova said. "The first one failed."

After its arrival in orbit, where it will reach an apogee of 114,000kilometers and an perigee of 7,000 kilometers, the satellite will slowly begin to deploy its equipment.

It is expected to be fully on line early next year and to continue to provide data for up to 10 years.

UCSB faculty and students will have access to that data and Córdova expects it to be the foundation of many faculty and doctoral investigations.

"That's the part I'm really excited about," Córdova said. "We've had students working with the equipment with simulators providing simulated data.

But there's nothing like getting your hands on some real data and making real discoveries."

Others on Córdova's UCSB team are postdoctoral researchers Robert Shirey and Jamie Kennea, graduate students Dirk Pandel and Jennifer West and research assistant Joshua MacAdam.

About UC Santa Barbara

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