UC SANTA BARBARA

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Gail Gallessich

UCSB Astrophysicist Is Awarded Sloan Fellowship

Crystal Martin, an astrophysicist and assistant professor of physics at the University of California, Santa Barbara, has received a prestigious Alfred P. Sloan Research Fellowship, joining a small group of physicists at UCSB to win the honor in recent years. The award is for $40,000 over two years.

Regarding the award, James Allen, chair of the Department of Physics said, "The department is very pleased for Crystal, but, of course, the entire department figuratively 'shares in the winning.'

We feel very fortunate to have an astrophysicist like Crystal Martin among our faculty.

She brings enormous creative energy to UCSB astrophysics and adds new dimensions to our classroom teaching."

Martin joined the faculty in May of last year and soon won the prestigious Packard Foundation Fellowship. In the spring quarter she will teach a graduate course in the interstellar medium. She has also taught galaxies and cosmology and supervises two graduate students, a post doc, and an undergraduate.

Martin hopes to learn why the efficiency of star formation varies so widely in different parts of a galaxy, and from one galaxy to another. For example, most of the stars in the Milky Way galaxy formed in the distant past, but the star formation

in other, nearby galaxies is still accelerating toward a peak rate. Martin also hopes to learn which properties of a galaxy, or which characteristics of a galaxy's environment, determine how fast the cooled interstellar gas is turned into young stars.

She explains that once the stars form, they have impact on the surrounding gases. The stars emit radiation which ionizes the gas, stripping electrons off atoms. This heats the gases. The massive stars burn up fuel very quickly and then explode as supernovae, adding turbulent energy and complex elements to interstellar gases. This affects the rate at which stars can condense into dense lumps and form more stars. This activity contributes to the formation and evolution of galaxies.

Martin observes nearby and distant galaxies across the electromagnetic spectrum. She frequently goes to the Keck Observatory on Mauna Kea in Hawaii, where she records spectra of galaxies on an electronic camera. She observes ultraviolet and x-ray wavelengths using satellites such as the Hubble and Chandra, and one named FUSE, short for "Far Ultraviolet Spectroscopic Explorer." She measures things like the gas outflow rate from galaxies, the star formation rate, and elemental abundances.

Related Links

Professor Martin's Web Page

Sloan Foundation

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