

Astrophysicist appointed holder of UCSD Chancellor's Associates Chair IV

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ASTROPHYSICIST APPOINTED HOLDER OF UCSD CHANCELLOR'S ASSOCIATES CHAIR IV

Arthur M. Wolfe, professor of physics at the University of California, San Diego has been named as the holder of the \$400,000 endowed Chancellor's Associates Chair IV.

Wolfe's appointment will continue until he ceases to be a professor at UCSD. Funds for all five Chancellor's Associates Chairs are unrestricted and set aside to recruit or retain exceptional faculty members.

Since joining the faculty at UCSD in 1990, Wolfe has been investigating the early phases of galaxy formation, particularly those events that give rise to rotating disks of stars and gas that today comprise spiral galaxies.

With the help of large optical telescopes, Wolfe focuses his gaze on what appears to be protogalaxies that existed when the universe was less than 20 percent of its current age. These clouds of cool hydrogen are believed to evolve into galaxies when the hydrogen they contain collapses under the pull of gravity to form stars. The huge disks of gas, which rotate like giant pinwheels, are believed to have given birth to galaxies about one billion years after the Big Bang.

In order to distinguish protogalaxies from other objects in space, Wolfe looks for a characteristic signature in the absorption spectrum called a damped Lyman alpha line, which is created by neutral hydrogen in the vast gas cloud. He also uses a high-resolution spectrometer to analyze very narrow absorption features produced by heavy elements such as silicon, nickel, and iron.

By studying such absorption lines, in 1995 Wolfe and then-graduate student Jason X. Prochaska were able to determine that protogalaxies were rotating at between 220 to 250 kilometers per second--more than double the speeds predicted for such an early stage of galaxy formation. Currently, Wolfe is using his measurements of velocity fields in protogalaxies to discriminate among theories of galaxy formation.

In 1967, Wolfe along with R. K. Sachs showed how density fluctuations in the primordial universe generated ripples called anisotropies in the microwave background, the faint radiation left over from the Big Bang. This so-called "Sachs-Wolfe effect" was confirmed and measured 25 years later by the Cosmic Background Explorer Satellite (COBE). The observations give strong support to the notion that the lumpy collection of stars and galaxies we see in the universe today started out as density fluctuations in the early universe.

Prior to joining UCSD, for about 17 years Wolfe was a member of the physics and astronomy faculty of the University of Pittsburgh. Earlier, he was a research associate with the Institute of Theoretical Astronomy at Cambridge University; a research associate with the University of Manchester; an exchange fellow with the P. N. Lebedev Physical Institute of the National Academy of Sciences, Moscow; and a research associate at UCSD.

He also has been a visiting professor at the Lick Observatory, the Kapteyn Astronomical Institute and the European Southern Observatory.

A native of New York City, Wolfe received a B.S. degree from Queens College, his M.S. degree from Stevens Institute of Technology, and a Ph.D. from the University of Texas, Austin.

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