

Nonlinear Science Institute at UCSD

January 17, 1986

The University of California Board of Regents formally established the Institute for Nonlinear Science at the University of California, San Diego at its monthly meeting Friday in San Francisco.

"I'm delighted The Regents have approved this organized research unit, which on an informal level has been active at UCSD for about two years," Dr. Harold Ticho, UCSD vice chancellor for academic affairs, said.

"This is a highly interdisciplinary research unit. The fields of participating faculty and researchers range from psychiatry and cardiology through physics, chemistry, engineering and oceanography all the way to the purest kind of mathematics. Such an interdisciplinary approach is a very effective means of generating the cross-fertilization of ideas," Ticho said.

Nonlinear science is the study of processes in nature and the laboratory that at first glance appear to be chaotic. However, in the apparent chaos, scientists are now beginning to find discernible patterns, according to Henry Abarbanel, coordinator of the project.

Some of the nonlinear processes under investigation by UCSD scientists are turbulence in the oceans and in nuclear fusion reactors, the motion of waves at sea, and complex biological systems with periodic behavior, such as a beating heart.

"This class of problems has been historically resistant to scientific analysis. But the advent of relatively inexpensive, high-speed computers within the last decade allows us at least to begin to address these problems," Abarbanel said.

This new streamlined computational "tool" allows nonlinear scientists to apply solutions from one discipline to problems that appear to be entirely different in another.

UCSD's new institute is a branch of a systemwide network involving similar efforts at the UC campuses at Davis, Berkeley, Santa Cruz, Santa Barbara and Los Angeles and the Center for Nonlinear Studies at the Los Alamos National Laboratory, which is operated by the university. The UCSD center is the second to receive The Regent's approval.

"I view this institute, both on the local and systemwide levels, as a major educational and research opportunity for the University of California. I see it as a way of enlarging and strengthening our already significant presence in nonlinear science," Abarbanel, a UCSD research physicist and adjunct professor, said.

"Our participation in the university-wide effort will bring us major opportunities for attracting excellent graduate students and superb research scientists. And the institute's presence at UCSD will bring in a significant amount of money to support research and to train graduate students in an interdisciplinary fashion," he said.

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