4-11-1988

# 04/11/1988 - EIU Math Professor Pioneers New Theories

University Marketing and Communications

EASTERN ILLINOIS UNIVERSITY
Charleston, Illinois
news

ART TATE, Assistant Director, University Relations
Office: (217) 581-5981 - Home: (217) 348-7553

88-86

April 11, 1988

FILE COPY

FOR IMMEDIATE RELEASE:

EIU MATH PROFESSOR PIONEERS NEW THEORIES

CHARLESTON, IL.--After three undergraduate students complained that a math assignment could not be done, Eastern Illinois University mathematics professor Dr. Suhrit K. Dey devised a new technique to solve the problem.

"These students dared me to work out the assignment on the chalkboard. After I had some difficulty finding the right method to solve the problem, I realized the assignment could be solved, but not by commonly taught mathematical concepts. I found a new method while in the classroom," Dey said.

-more-

"We all wrote computer programs on this work, and we received the correct results and began thinking of other applications of my new finding," he added.

Dey's new computations in the field of fluid dynamics, devised in 1972 while at Eastern, have received international attention and have affected the motions of automobiles and airplanes, chemical reactions in the body, air pollution and new research into heart disease.

He explained, "Most mathematical models related to various branches of engineering are nonlinear. To find an answer to the behavior of most of these models, nonlinear systems must be solved ... Since it is sometimes too expensive to find the mathematical solution in a laboratory, mathematical tools are often applied to simulate the model and then computers are used to generate results with a high degree of accuracy."

Dey's research interests are primarily in numerical methods, mappings and modelings and their validations by computer solution and simulation. He has been able to develop a numerical method and mapping which have been used to solve various nonlinear models in fluid dynamics.

His expertise in fluid dynamics research has resulted in many invitations to speak, lead discussions and teach special seminars and courses in many universities and research laboratories in more than 20 states and in India, Poland, Belgium, France, Finland, West Germany, Canada and Yugoslavia.

He has lectured at various North Altantic Treaty Organization (NATO) conferences attended by many internationally-known scientists in the field of computers and motion of fluids and made presentations at the National Aeronautics Space Administration (NASA) Langley Research Center in Hampton, Va., and NASA-Ames Research Center at Moffett Field, Calif.

He has done research for NASA, as well as for the Lawrence Berkeley Lab at the University of California where he solved a crucial mathematical problem related to cancer research.

"This work required an understanding of chemical reactions in the human body ... I knew nothing about these reactions. Finally, I was able to solve the problem, delighting researchers at Berkeley and NASA. It was the most perplexing problem I had ever seen," he said.

Various aspects of his research in numerical modeling has appeared in reviewed journals from Belgium, England, France, India, Poland, Sweden, West Germany and the United States.

Through grants obtained from the University of Illinois and the U.S. Air Force, Dey has been able to develop his recent methods for solving problems in fluid dynamics using the super computer CRAY X-MP at Arnold Air Force Station, Tullahoma, Tenn.

Dey's research has brought him honors and awards from Eastern, the University of Calcutta, Illinois State Academy of Science, Argonne National Laboratory, Hinemann Foundation of Hanover (West Germany), Stanford University and the National Research Council of Washington, D.C.

He edits two scientific journals, "Advances in Partial Differential Equation," and "Simulation," published by the Society for Computer Simulation at San Diego, Calif. He also serves on the editorial board for a third journal published by the University of Nis in Yugoslavia.

A native of Calcutta, India, Dey completed his bachelor's degree with honors in mathematics from the Scottish Church College in Calcutta and his master's degree in applied mathematics from the University of Calcutta.

He and his wife moved to the United States in 1966. Dey completed his doctorate degree in aerospace engineering from Mississippi State University in 1969 and joined the Eastern faculty in 1970.

Dey credits Dr. Joe F. Thompson at MSU for teaching him how to use computers and to analyze motions of fluid particles. "Dr. Thompson was my 'guru.' He was not only one of my best teachers, but he is a truly outstanding scientist," he said.

His son Charlie, a 16-year-old sophomore at Charleston High School, began working with him five years ago, particularly with computer programming. "In California, while I was at NASA-Ames, I had no student help who could type my programs into computers and run my programs. Charlie not only provided me with this valuable help, but even corrected some of my work," Dey said.

In addition to working with his father in the area of computations, Charlie has lectured at meetings in West Germany, Poland and Yugoslavia.

Dey has not only had strong support from his son, but from his wife Sabita and daughter Sujata, a junior majoring in graphics design at EIU.

He said his achievements have been accomplished by following a basic philosophy in life. "I believe everyone should enrich himself intellectually daily. Each day a person should ask, 'What did I accomplish today?' and 'What can I accomplish tomorrow?' Time has no replacements."

-30-