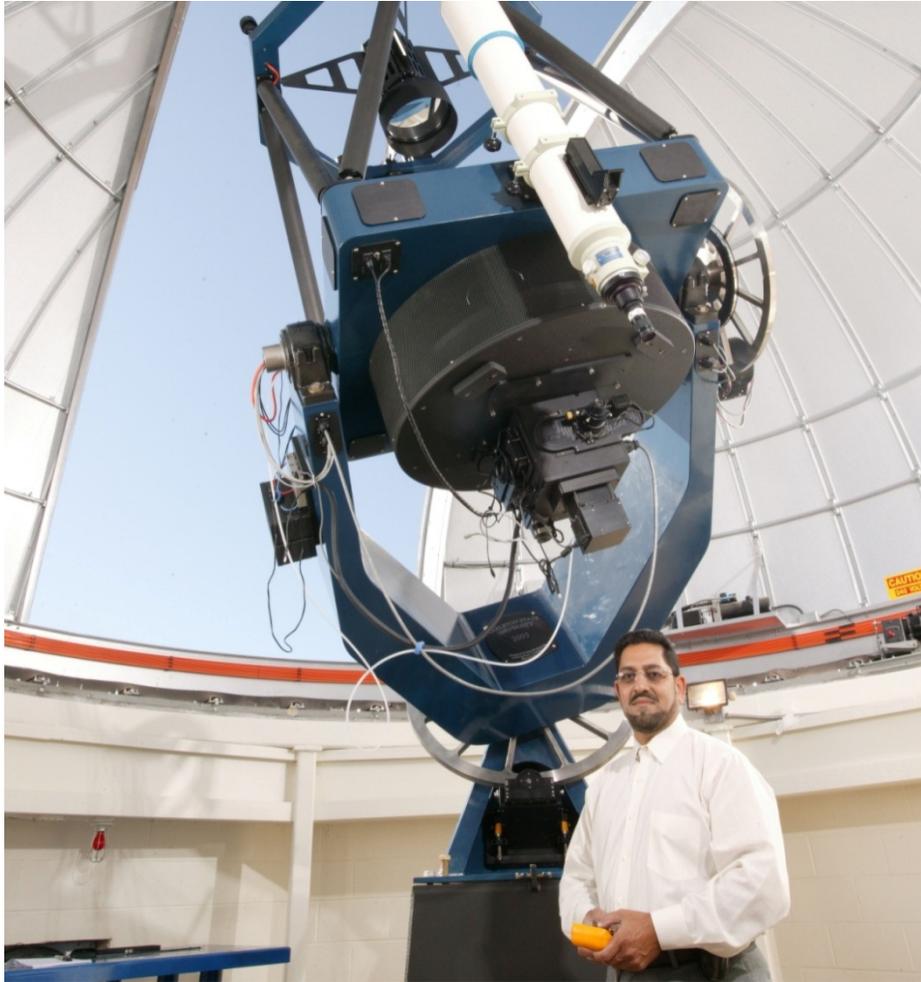


ASTRONOMY



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B.S. Physics – University of Karachi, 1981

M.S. Physics – Southern Illinois University at Carbondale, 1989

Ph.D. Physics – University of Nebraska-Lincoln, 1995

Selected Papers

“Advances in Automated Algorithms for Morphological Classification of Galaxies Based on Shape Features,” S. Goderya, et al., APS Conference Series Vol. 314, pp. 617, 2004.

“Morphological Classification of Galaxies using Computer Vision and Artificial Neural Networks: A Computational Scheme,” Goderya S. N., S. M. Lolling, Astrophysics and Space Science Journal, 279, No. 4, p377-387, 2002

ASTRONOMY

Shaukat Goderya interest is in astronomy with an emphasis on eclipsing binary stars and data mining with artificial neural networks. Astronomy is the oldest of all sciences, yet it is as exciting today as it was to the people of the earliest times. The need to explore and understand is the basis for our existence and through interplay of curiosity discovery and analysis astronomers have used the electromagnetic spectrum to understand the nature of the Universe. Observations in the electromagnetic spectrum are a lifeline to progress in astronomy, consequently people from many different scientific fields use their talents and skills to design and build novel instruments, detectors and telescopes to study the form and structure of the Universe and to answer the age old question of “Are we Alone in the Universe”. Astronomy excites students of all ages and people from all walks of life.

Goderya’s academic career began as an Assistant Professor of Physics and Coordinator of General Education Laboratories at Illinois State University in Normal, Illinois. He has also served as TOKTEN Consultant under the United Nations Development Program. He is now an Associate Professor at Tarleton State University and is also the Director of Programs for Astronomy Education and Research and is responsible for the operation of the Planetarium and the remotely controlled 32 “ telescope at the Observatory. He holds membership in American Astronomical Society (AAS), American Association of Physics Teachers (AAPT), Institute of Electronics and Electrical Engineers and Sigma Xi. He is also a member of the Texas Space Grant Consortium.

Goderya and his students use the Texas Physics Coalition’s 32” Ritchey-Chretien telescope to obtain and analyze the light curves of eclipsing binary stars. Binary stars are two stars that orbit a common center of mass and about 90% of the stars in our galaxy are binary stars. Their study shed important information on the properties and evolution of stars. Students also monitor and analyze the light curve of extra solar planets using the Transit Photometry technique. The ability to discover earth like planets capable of harboring life is a major challenge in today’s frontiers in astronomical research. Goderya and his students also investigate the application of computer based artificial intelligence techniques and signal processing for data mining applications in astronomy including the automated identification and classification of light curves of eclipsing binary stars. The 32” telescope is the largest telescope at any undergraduate institution and is remotely accessible via the internet. Its large area (0.5 degree field of view) CCD camera is ideal for photometry and a variety of astronomical research projects such as search for near earth objects (NEOS), asteroids and monitoring of supernova explosions. Under his guidance students have also built radio telescopes using TV satellite dishes and electronic components available in the market. Radio astronomy provides students the opportunity to learn the science of radio and its application to astronomy. An activity in which students use their skills learned in laboratory and their physics, astronomy and engineering courses to solve real world scientific problems.