Nurse's son leads India in LIGO project

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Ahmedabad: His mother was working as a staff-nurse in a government hospital of Dhanbad in undivided Bihar, while his father used to do office work in West Bengal Electricity Company. But his passion to explore the universe helped him create his own small place in the historic discovery of Einstein's gravitational waves.

Professor Anand Sengupta, a professor in Indian Institute of Technology, Gandhinagar (IIT-Gn), led a team of scientists under the aegis of Indian Initiative in Gravitational-Wave Observations (IndIGO) — a consortium of scientists from nine research institutes and universities in India — participating in the Laser Interferometer Gravitational-wave Observatory Scientific Collaboration (LIGO).

The gravitational waves were predicted by Albert Einstein in his general theory of relativity 100 years ago in 1915. The gravitational waves were detected on September 14, 2015 by LIGO detectors, located in Livingston, Louisiana, and Hanford, Washington, USA.

Sengupta had joined IIT-Gn in 2012. However, his journey in the field of gravitational waves, astronomy and science has been continuing for the past 13 years. Sengupta, who belongs to Dhanbad district, said that his interest in cosmic waves spiked when he started doing his PhD in theory of early universe.

Professor Anand Sengupta

"I was told that this field is very difficult and it could take several decades to search this illusive gravitational waves, and that made me very curious. I wanted to know why is it so difficult?" he said.

"Almost everything we know about the universe has been through detection of light at different wavelengths. As gravitational waves carry different kind of information than light, this discovery has thrown open a fundamentally new way of observing the universe," he said.

Sengupta further said that these waves are quite faint and challenging to detect. Special data processing techniques are needed to detect them in the noisy data-detector channels.

LIGO was originally proposed as a means of detecting these gravitational waves in the 1980s by Rainer Weiss, professor of physics, emeritus, from MIT; Kip Thorne, Caltech's Richard P Feynman professor of theoretical physics, emeritus; and Ronald Drever, professor of physics, emeritus, also from Caltech.

IndIGO was formed in 2009 by a group of researchers with expertise in theoretical and experimental gravity, cosmology and optical metrology, who were keen on promoting gravitational wave research in the country with a dream of realizing an advanced detector in India.

From its inception, Sengupta was active in the IndIGO's interaction with the LIGO Scientific Collaboration (LSC) – a group of more than 1,000 scientists from universities in USA and 14 other countries — as the nominated principal investigator of this Indian group and served the nascent community in this capacity till 2014.

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