

Special Breakthrough Prize in Fundamental Physics 2016

A Special Breakthrough Prize has been announced for the detection at the LIGO observatory of gravitational waves from a merger of two black holes a billion years ago. The Breakthrough Prize is a prestigious international award given for breakthroughs in basic sciences and mathematics.

The \$3 million award will be shared between two groups of laureates: the three founders of the Laser Interferometer Gravitational-Wave Observatory (LIGO), who will each equally share \$1 million; and 1012 contributors to the discovery, who will each equally share \$2 million.

Sharing the prize are thirty seven researchers from various institutions in India including the International Centre for Theoretical Sciences (ICTS) of TIFR in Bangalore, TIFR-Mumbai, IUCAA, CMI, IISER Kolkata, IISER Trivandrum, IIT Gandhinagar, IPR and RRCAT.

The ICTS team, led by P. Ajith, consists of Abhirup Ghosh, Archisman Ghosh, Arunava Mukherjee, Chandrakant Mishra, Nathan Johnson-McDaniel and Bala Iyer. The analysis that they lead within the LIGO scientific Collaboration was one of the handful of tests used to establish the consistency of the observed signal with that coming from a binary black hole system predicted by Einstein's theory. The group also contributed to the estimates of the mass and the spin angular momentum of the final black hole, as well as the energy and power release from this astrophysical event -- the most powerful transient astrophysical phenomenon observed by humankind so far. Some of the data analysis computations were performed at the LIGO Tier-3 grid computing facility at ICTS. Bala Iyer, who made early significant contributions to the subject and who is the chairperson of the IndIGO consortium is presently Simons Visiting Professor at ICTS. The IndIGO consortium led the successful effort to establish a gravitational wave observatory in India (LIGO-India) which has recently been approved by the Govt of India.

The laureates will be recognized at the 2017 Breakthrough Prize ceremony in the fall of 2016, where the annual Breakthrough Prize in Fundamental Physics (distinct from the special prize) will also be presented, along with the Breakthrough Prizes in Life Sciences and Mathematics.

This is a moment of pride not only for ICTS-TIFR, but also TIFR and India as a whole.

Rajesh Gopakumar, Senior Professor and Director, ICTS-TIFR, commented: "The fact that a special breakthrough prize was announced is a testimony to how truly momentous a discovery this was. I am thrilled that seven members of ICTS-TIFR are among those who have been recognised. The ICTS seven are a brilliant set of scientists and we fully expect more discoveries from them in the new era of gravitational wave astronomy."

Spenta R. Wadia, Distinguished Professor Emeritus and Founding Director, ICTS-TIFR, says: "This is a recognition for a momentous discovery about the predictions of Einstein's theory: gravitational waves open up a new window to observe the universe and seeing/hearing them also tells us directly that black holes exist in the universe! The future of astronomy is full of exciting unknown possibilities. Kudos to the scientists in India who participated in this discovery. I am especially proud of the young ICTS group for its significant contribution."

Vanita Srivastava

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