ICTS | International Centre for Theoretical Sciences

TATA INSTITUTE OF FUNDAMENTAL RESEARCH

॥ श्रद्धाहि परमा गतिः ॥

THE BANGALORE SCIENCE FORUM — Know it by repeated questioning — 1962

Einstein lectures

PUBLIC LECTURE SERIES CELEBRATING THE CENTENARY OF
ALBERT EINSTEIN'S GENERAL THEORY OF RELATIVITY

Einstein lecture by

B. S. Sathyaprakash

Bert Elsbach Professor of Physics, Pennsylvania State University and Professor of Physics, Cardiff University

Dawn of new astronomy: How Einstein can take from Planck to Hubble

On August 17, 2017 the US LIGO and European Virgo gravitational-wave detectors made a monumental discovery, of the inspiral and coalescence of a pair of neutron stars. The collision of neutron stars created massive fireworks that is still visible to the best telescopes. Two seconds after LIGO's discovery, Fermi Gamma-ray Space Telescope and the International Gamma-Ray Astrophysics Laboratory, both observed short gamma ray bursts from the same source. LIGO-Virgo detection triggered an observational campaign by some 70 telescopes all over the world, leading to the identification of the host galaxy, followed by detection of the counterpart in infrared, UV, X-rays and radio in the following hours and weeks. These observations are already providing us clues to some of the long-standing problems in astrophysics while raising new ones that require a closer examination of merger events. In this talk, I will describe gravitational waves, how LIGO made the discovery, what we have learned from LIGO's discoveries so far and what we can expect to learn in the future.

It is particularly exciting to come back to an institution some 40 years later where a similar talk helped me choose between engineering and physics.

Sathyaprakash's research has focussed at different times on gravitational wave sources and science, algorithms for their detection, data analysis and future detectors; tests of Einstein's general theory of relativity; dynamics of binary black holes and black hole quasi-normal modes; cosmology and the large-scale structure of the Universe; classical field theory, symmetry breaking and applications to cosmology. His work on gravitational waves was key to their discovery and new tests of general relativity. He is currently leading an international consortium of scientists to develop the science case for the next generation of gravitational wave detectors.

Sathyaprakash received his first degree from the National College, Bangalore, in 1979, and went on to study MSc in Physics at the Indian Institute of Technology, Madras. He did his PhD in Theoretical Physics at the Indian Institute of Science, Bangalore. He was briefly employed at IUCAA before moving to Cardiff University, UK and later to Penn State.

02 March 2019 (Saturday) at **6 pm**
Dr H Narasimha Multimedia Hall,
National College, Basavanagudi, Bluru - 04

ADMISSION FREE. REGISTER ONLINE AT
www.bit.ly/el2019march2

E-mail: outreach@icts.res.in
https://icts.res.in/lectures/einstein