



The 8th Annual Homi Bhabha Memorial Public Lecture

What Gravitational Waves Tell Us About The Universe

Prof. Alessandra Buonanno

Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Germany



Prof. Alessandra Buonanno is a leading theoretical physicist working in the field of gravitational wave and cosmology and a principal investigator of the LIGO Scientific Collaboration. She is well known for her work on waveform modelling, which has been essential for detecting gravitational waves from binary objects composed of black holes and neutron stars. Her work was important in the discovery of gravitational waves in 2016. For her contributions to LIGO and Virgo discoveries, she was awarded the Gottfried Wilhelm Leibniz prize in 2018 and the Galileo Galilei medal in 2021. She is a fellow of the International Society on General relativity and Gravitation and the American Physical Society. She is a recipient of the Dirac medal of ICTP, Trieste for 2021, and she was elected member of the US National Academy of Sciences, German National Academy of Sciences Leopoldina, and of the Berlin-Brandenburg Academy of Sciences and Humanities in 2021.

In 2015 the LIGO detector observed, for the first time, a gravitational wave passing through the Earth produced by the collision of two black holes. Such an event was a milestone for astrophysics and it provided a spectacular confirmation of Albert Einstein's general theory of relativity. Since then, 90 gravitational waves have been observed by the LIGO and Virgo experiments. In this lecture, I will discuss how those novel astronomical messengers are already unveiling distinctive and puzzling properties of the most peculiar astrophysical objects in the universe: black holes and neutron stars. In the next decades, those sounds of silent will provide us with the unique and wondrous opportunity of peering back to the time the first stars formed, and eventually to the very earliest moments of the universe, shedding light on its origin.

When: Friday, 3rd December 2021

Time: 6 pm (IST)

Online Seminar: Join the online seminar on Zoom platform (<https://zoom.us/j/99201120556?pwd=REhnbFBkRzBKaHZBcGZVUE5RNnMrZz09>)

Meeting ID: 992 0112 0556, **Passcode:** 164696