

# ICTP-SAIFR/IFT-UNESP PHYSICS DISCUSSIONS



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## 5 YEARS OF GRAVITATIONAL WAVE ASTRONOMY

The first direct detection of gravitational waves was announced 5 years ago. The LIGO and Virgo Collaboration (which now includes KAGRA too) has recently updated their catalog of merging binaries of black holes and neutron stars: the catalog now contains a total of 50 events. In this talk I will give an overview of what gravitational waves are and how we observe them. I will discuss the discoveries made over the past 5 years and how they help us learn about fundamental physics (tests of relativity; state of dense matter), astrophysics (origin of neutron star and black hole binaries; origin of certain elements), and cosmology.

**JOLIEN CREIGHTON** has been chair of the Ligo Scientific Collaboration (LSC) internal review committee for the burst group during 5 years (2005–2009) and the LIGO/LSC Algorithm Library librarian since 2000. He has received six awards from the National Science Foundation (NSF) and his research is currently supported by two of them, PHY-0701817 and PHY-0600953.

**MORE INFORMATION:** [ictp-saifr.org/physicsdiscussions](https://ictp-saifr.org/physicsdiscussions)