



# UNIVERSITÀ DI PARMA

Dipartimento di Scienze Matematiche, Fisiche ed Informatiche

SEMINARIO DI DIPARTIMENTO

Mercoledì, 17 Gennaio 2018, ore 17:30 presso Centro S. Elisabetta CAMPUS

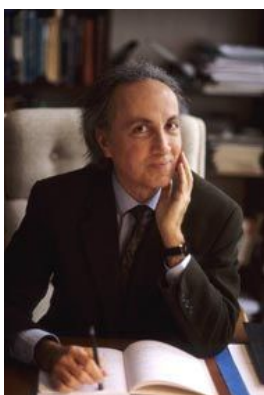
**Thibault Damour**

Institut des Hautes Etudes Scientifiques

Bures sur Yvette, France

## *Gravitational Waves and Coalescing Black Holes*

**Abstract:** Two of the most novel predictions of Einstein's theory of General Relativity were discovered soon after its creation one century ago: Black Holes (Schwarzschild, January 1916) and Gravitational Waves (Einstein, June 1916). It took more than 50 years to grasp the physical significance of these theoretical discoveries. The recent discovery of several gravitational wave events by the two Laser Interferometer Gravitational-Wave Observatory (LIGO) interferometers, and by the Virgo interferometer, has brought the first direct evidence for the existence of black holes, and has been the first observation of gravitational waves in the wave-zone. In addition, the recent detection of the gravitational waves emitted by coalescing binary neutron stars has clarified several longstanding mysteries in astronomy. After briefly reviewing the experimental and theoretical developments on gravitational waves, the talk will focus on the theoretical work on the motion and gravitational radiation of binary black holes (and binary neutron stars) that has been decisive in interpreting the LIGO-Virgo events.



Thibault Damour is a professor of theoretical physics at the [Institute des Hautes Etudes Scientifiques](#) (Paris) since 1989. He is an expert of general relativity and field theories. His research focuses on black holes, gravitational waves and string theory. For his research achievements, he has been awarded with many prizes; the most recent ones are the Special Breakthrough Prize in Fundamental Physics for detection of Gravitational Waves (2016), the Gruber Cosmology Prize (2016) and the médaille d'or du CNRS (2017). He is a proficient lecturer, and he has given many popular talks (including at radio programs) and co-authored a graphic novel (*Le Mystère du Monde Quantique*, Damour&Burniat, 2017).