

# Challenges and Opportunities of High Frequency Gravitational Wave Detection



**14 - 16 October 2019**  
**Trieste, Italy**

Further information:  
<http://indico.ictp.it/event/9006/>  
[smr3493@ictp.it](mailto:smr3493@ictp.it)

Most of what we know so far about the origin and evolution of the Universe is based on the information carried by electromagnetic radiation received from distant objects or composing the CMB. The recent direct detections of Gravitational Waves (GWs) have opened a new window of observation for phenomena in which gravity, instead of light, is the messenger. A few black hole and neutron star mergers have been reported and a plethora of new events are expected to be detected in the near-to-mid future. Many possible sources, especially related to the physics of the early Universe, produce (stochastic backgrounds of) GWs with a characteristic frequency much larger than the LIGO frequency range. The detection of high frequency GWs (HFGWs) is however very challenging, and only a few proposals have been made so far.

The goal of this workshop is an open-minded discussion on the experimental and theoretical prospects of HFGWs. What are the possible sources and how well are they theoretically understood? What are the challenges faced in experimental setups and what are possible ideas to go beyond current technology? What can we learn about our Universe within the expected sensitivity of these proposals in the next decade? Our goal is to tackle these open questions by gathering a selected sample of people who are interested in these questions both from the theoretical and the experimental points of view. A few dedicated talks aim at introducing the key aspects and questions and bridging the gap between the different communities, while leaving ample time for discussions.

## Topics:

- High Frequency Gravitational Waves
- Early Universe Cosmology
- High energy phase transitions
- Non-perturbative phenomena
- Interferometers
- Acoustic Cavities
- Optically levitated Sensors

## How to apply:

Online application:  
<http://indico.ictp.it/event/9006/>

Female scientists are encouraged to apply.

## Grants:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from developing countries. There is no registration fee.

## Organizers:

V. DOMCKE, DESY  
F. MUIA, ICTP  
F. QUEVEDO, ICTP  
J. STEINLECHNER, Maastricht University  
S. STEINLECHNER, Maastricht University

## Speakers include:

O.D. AGUIAR, Instituto Nacional de Pesquisas Espaciais - INPE  
A. BAUSWEIN, GSI Darmstadt  
M. CRUISE, University of Birmingham  
D. FIGUEROA, Instituto de Física Corpuscular - IFIC  
A. GERACI, Northwestern University  
M. GORYACHEV, University of Western Australia  
H. GROTE, Cardiff University  
M. HINDMARSH, University of Sussex  
D. OTTAWAY, University of Adelaide  
M. PELOSO, University of Padova

## Deadline:

**1 September 2019**



The Abdus Salam  
International Centre  
for Theoretical Physics  
[www.ictp.it](http://www.ictp.it)  
Trieste, Italy

