





# The Galileo Galilei Institute for Theoretical Physics Arcetri, Florence

Gravitational scattering, inspiral, and radiation

# April, 19 2021 - May, 21 2021

This online workshop will gather theorists working on different, yet connected, aspects of gravitational wave production from the collision/merger of two compact bodies. The first week (Apr. 19-23) will be devoted to tutorial lectures, the second (Apr. 26-30) to a conference, and the last three weeks to a more standard workshop program. Main themes to be discussed will include:

1 - to deepen links, and foster new collaborations, between the quantum gravitational scattering amplitude and the GR community, leading to improved perturbative approaches to the two-body system;

2 - to identify new synergies between the GR analytical and numerical communities which can improve the construction of waveform templates for the analysis of LIGO/Virgo data;

3 - to connect low frequency properties of the gravitational wave spectrum to recent progress in soft-graviton theorems, including predictions for gravitational memory, asymptotic symmetries, and logarithmic enhancements;

4 - to explore the implications of LIGO/Virgo data for modified gravity theories.

#### **Organizing Committee:**

Dimitri Colferai (University of Florence), Claudia de Rham (Imperial College London), Alessandro Nagar (INFN, Turin), Donal O'Connell (University of Edinburgh), Pierre Vanhove (CEA, Saclay), Gabriele Veneziano (CERN), Alexander Zhiboedov (CERN)

## **Topics:**

- Analytic and numerical methods for the general relativistic two-body problem
- High energy gravitational scattering and radiation
- New approaches to gravitational amplitudes
- Soft theorems and their use for computing GW signals

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#### • Alternative theories of gravity

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