

FAKULTÄT für PHYSIK
LUDWIG-MAXIMILIANS-UNIVERSITÄT
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT
TECHNISCHE UNIVERSITÄT MÜNCHEN
MÜNCHEN/GARCHING

Garching Maier-Leibnitz-Kolloquium

Donnerstag, 12.05.2022, 16¹⁵ Uhr

Hörsaal der LMU in Garching, Am Coulombwall 1
Treffen zum gemeinsamen Kaffee 16 Uhr

Dr. Henrique Rubira

(Physik Department, TU München)

What gravitational waves can teach us about the Big Bang

Though gravitational waves (GWs) were predicted by Albert Einstein in 1916, their detection only happened in 2015, a hundred years later, by the LIGO/VIRGO collaboration. LIGO and VIRGO Earth-based interferometers detected black holes and neutron star binaries colliding billions of light-years away from our galaxy. That outstanding discovery has led the 2017 Nobel Prize to Rainer Weiss, Kip Thorne, and Barry Barish. By now, all detected sources of GWs are composed of localized (in space) objects: inspiring systems such as Black Holes and Neutron stars. The LIGO/VIRGO detection has set the beginning of a new scientific program focused on using GWs to learn about the Universe. The next milestone step in this program will be the LISA telescope. LISA, which is planned to be launched in the next decade, will be a triangular-shaped interferometer based in the space, each of its three detectors being millions of kilometers apart from each other. In this talk, I will focus on how the LISA interferometer will help us to probe new kinds of sources of GWs: highly-energetic phenomena in the early Universe that may generate GWs at every observed patch of the sky. We call this type of source a Stochastic Gravitational-Wave Background. I will focus on which type of phenomena may lead to this kind of GWs. I will also explain how an eventual detection of this type of source of GWs can bring a deeper understanding of how our Universe was just after the Big Bang.

Hybrid online access via ZOOM:

<https://lmu-munich.zoom.us/j/98457332925?pwd=TWc3V1JkSHpyOTBPQVIMelhuNnZ1dz09>

Meeting ID: 984 5733 2925

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