





# The Galileo Galilei Institute for Theoretical Physics Arcetri, Florence

# Bootstrapping Nature: Non-perturbative Approaches to Critical Phenomena Oct 03, 2022 - Nov 04, 2022

New non-perturbative tools such as the conformal bootstrap and dualities have been recently used to study strongly coupled phase transitions, which complements non-perturbative methods such as lattice Monte Carlo. This workshop will bring together scientists from the neighbouring communities of condensed matter and high energy theory to identify new continuous phase transitions that appear in nature, especially those with emergent gauge fields, and develop strategies to solve these systems and guide ongoing experiments.

## Training Week: Oct 03, 2022 - Oct 07, 2022 Lectures include:

- Introduction to conformal bootstrap (Andreas Stergiou)
  - Introduction to lattice methods (Anders Sandvik) •
- Gauge theories and dualities in 2+1 dimensions (Zohar Komargodski) •

## Conference: Oct 17, 2022 - Oct 21, 2022

Organizing Committee: Shai Chester (Weizmann Institute) Ribhu Kaul (U. of Kentucky) Subir Sachdev (Harvard U.) Alessandro Vichi (U. of Pisa) Chong Wang (Perimeter Institute)

### **Topics:**

- Critical phase transitions
- Numerical conformal bootstrap
- Lattice methods



#### William Witczak-Krempa (U. of Montreal)

#### • Gauge theories in 2+1 dimensions





