

WORKSHOP

# “*Bridging analytical and numerical methods for quantum field theory*”

**25-29 AUGUST, 2025**

ECT\* Villa Tambosi, Villazzano



## Organizers

- **Aleksey Cherman**
- **Andreas Athenodorou**
- **Michele Caselle**
- **Theodore Jacobson**

**Abstract:** The workshop aims to bring together researchers specializing in analytical and numerical methods for the study of quantum field theories (QFTs). This interdisciplinary gathering will unite scientists investigating various aspects of strongly coupled QFTs, including but not limited to the exploration of confinement, phase transitions, and other phenomena relevant to both condensed matter and high energy communities. The one-week workshop intends to highlight a diverse set of modern analytic and numerical techniques such as lattice Monte Carlo methods, topological phases of matter, tensor networks, machine learning, quantum computing, generalized symmetries and anomalies, as well as topological data analysis, with the hope of emphasizing common points of application. The overarching goal of this workshop is to foster collaboration and synergy between the communities of physicists employing analytical and numerical approaches to investigate QFTs. By doing so, it seeks to initiate a coordinated effort to address key challenges in this field. Thanks to some expected outside funding (see below), we hope to especially encourage participation by younger scientists.

**ECT\* Director: Prof. Ubirajara van Kolck**

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For the organization please contact: Susan Driessen – ECT\* Secretariat - Villa Tambosi - Strada delle Tabarelle 286 | 38123 Villazzano (Trento) – Italy | Tel.:(+39-0461) 314722, E-mail: [driessen@ectstar.eu](mailto:driessen@ectstar.eu) or visit <http://www.ectstar.eu>