

Tackling the real-time challenge in strongly correlated systems: spectral properties from Euclidean path integrals

September 13-17, 2021

Abstract | Main Topics

Experiments at the forefront of physics elucidate the real-time properties of strongly correlated quantum systems from the transport of quarks and gluons in a QuarkGluon Plasma created in a heavy-ion collision to the conduction of electrons in a highly complex functional material. While simulations of Euclidean path integrals already provide unprecedented non-perturbative insight into the static properties of strongly correlated systems, access to real-time properties in the form of spectral information is still severely limited. Over the past decade the field has however witnessed significant progress in tackling this real-time challenge based on both conceptual developments, as well as improved data analysis strategies involving probabilistic reasoning. It is the goal of this workshop to bring together experts from different fields of physics, to discuss and explore synergies among these recently developed methods and chart a path towards robust determination of spectral realtime information from Euclidean path integrals.

Keynote speakers

Shoji **Hashimoto** (KEK), Maxwell **Hansen** (Edinburgh University), Nazario **Tantalo** (University of Rome Tor Vergata), Harvey **Meyer** (Mainz University), Stefano **Carrazza** (Turin University), Chris **Alton** (Swansea University), Andrey **Mishchenko** (RIKEN), Marta **Constantinou** (Temple University), Kostas **Orginos** (William & Mary), Hiroshi **Shinaoka** (Saitama University), Etsuko **Itou** (RIKEN), John **Bulava** (SDU)

Organizers

Sinéad **Ryan** (Trinity College Dublin); Alexander **Rothkopf** (University of Stavanger); Antony **Francis** (CERN)

Director of the ECT*: Professor Gert **Aarts** | The ECT* is part of the Fondazione Bruno Kessler.
The Centre is funded by the Autonomous Province of Trento, funding agencies of EU Member and Associated states,
and by INFN-TIFPA and has the support of the Department of Physics of the University of Trento.

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