

# **Advances in Lattice Gauge Theory 2019**

**Monday, July 22, 2019 - Friday, August 9, 2019**

**CERN**

## **Scientific Program**

## Scattering & spectroscopy

The rich spectrum of QCD, including many states that do not easily fit into quark models, has motivated LQCD calculations of scattering amplitudes in order to rigorously determine resonance properties. These are typically performed by using finite-volume energies to constrain infinite-volume scattering amplitudes through model-independent relations.

In Week 1 we will consider the status and limitations of this approach and discuss alternative methods and future directions.

## Form factors, transitions & decays

For stable QCD states as well as resonances, a detailed knowledge of the structure and the coupling to electroweak and other interactions requires the calculation of form factors, as well as transition and decay amplitudes.

In Week 2 we will review progress and challenges in extracting these types of observables from LQCD.

## QED+QCD

As QCD-only calculations reach sub-percent level precision, the effects of QED and strong isospin breaking must be included, in order to give meaningful determinations of experimental observables.

In Week 3 we will discuss the status and the challenges, both formal and numerical, in QED+QCD based calculations.