

**Session Program**

**Nov 6 - 10, 2023**

**Quantum Observables for Collider Physics**

***Sessions***

GGI, A

# Mon, November 6

4:30 PM

## Sessions: Afternoon

Session | Location: GGI, A

4:30 - 5:05 PM **Loopholes for Bell-Inequalities: what about colliders?**

**Speaker**

Marco Fabbrichesi

5:05 - 5:40 PM **Entanglement suppression, enhanced symmetries and SM-like Higgs**

**Speaker**

Ian Low

5:40 - 6:15 PM

**Probing the limits of quantum theory with quantum information at subnuclear scales**

**Speaker**

Michal Eckstein

6:30 PM

## Tue, November 7

9:00 AM

### Sessions: Morning

Session | Location: GGI, A

9:30 - 10:15 AM **Spin correlation and entanglement with the ATLAS experiment**

**Speaker**

James William Howarth

10:30 AM

2:00 PM

### Sessions: Afternoon

Session | Location: GGI, A

2:00 - 2:30 PM

**When the Machine Chimes the Bell: Entanglement and Bell Inequalities with Boosted  $t\bar{t}$**

**Speaker**

Dorival Gonçalves

2:30 - 3:00 PM

**Quantum SMEFT tomography: top quark pair production at the LHC**

**Speaker**

Luca Mantani

3:00 - 3:30 PM

**Quantum entanglement and top spin correlations in SMEFT at higher orders**

**Speaker**

Claudio Severi

3:30 PM

## Wed, November 8

10:45 AM

### Sessions: Morning

Session | Location: GGI, A

10:45 - 11:15 AM **Isolating semi-leptonic  $H \rightarrow WW^*$  decays for Bell inequality tests**

**Speaker**

Theo Maurin

11:15 - 11:45 AM **Testing entanglement and Bell inequalities in  $H \rightarrow ZZ$**

**Speaker**

Jesús Moreno

11:45 AM - 12:15 PM

**Exploring Bell inequalities and quantum entanglement in vector boson scattering**

**Speaker**

R. A. Morales

12:15 PM

2:00 PM

### Sessions: Afternoon

Session | Location: GGI, A

2:00 - 2:30 PM

**Entanglement and Bell inequalities violation in  $H \rightarrow ZZ$  with anomalous coupling**

**Speaker**

Alexander Bernal González

2:30 - 3:00 PM

**Stringent bounds on HWW and HZZ anomalous couplings with quantum tomography at the LHC**

**Speaker**

Luca Marzola

3:00 - 3:30 PM

**Probing new physics through entanglement in diboson production**

**Speaker**

Eric Madge

4:00 PM

# Thu, November 9

9:00 AM

## Sessions: Morning

Session | Location: GGI, A

9:00 - 9:30 AM

### Quantum information and CP measurement in $H \rightarrow \tau^+ \tau^-$ at future lepton colliders

#### Speakers

Mohammad Altakach, Priyanka Lamba

9:30 - 10:00 AM

### Entanglement and entropy in multipartite systems: a useful approach

#### Speaker

J. A. Casas

10:00 - 10:30 AM

### Three-body Entanglement in Particle Decays

#### Speaker

Kazuki Sakurai

10:30 AM

2:00 PM

## Sessions: Afternoon

Session | Location: GGI, A

2:00 - 2:45 PM

### Searches for Quantum Decoherence at Belle and Belle II

#### Speaker

Hans-Guenther Moser

2:45 - 3:15 PM

### Violation of Bell inequalities with taus at Belle II

#### Speaker

Christian Veelken

3:15 - 3:45 PM

### Bell inequality is violated in $B^0 \rightarrow J/\psi K^*(892)^0$ decays

#### Speaker

Emidio Gabrielli

4:00 PM

# Fri, November 10

9:00 AM

## Sessions: Morning

Session | Location: GGI, A

9:00 - 9:30 AM **Top-Antitop Reconstruction**

**Speaker**

Baptiste Ravina

9:30 - 10:00 AM

**Unfolding Methods in Particle Physics for Quantum Information Observables**

**Speaker**

Michele Pinamonti

10:00 - 10:30 AM **Challenges in modelling  $t\bar{t}$  spin correlations**

**Speaker**

Eleni Vryonidou

10:30 AM