

# **Radiative corrections and Monte Carlo tools for low-energy hadronic cross sections in $e^+e^-$ collisions**



## **Report of Contributions**

Contribution ID: **1**

Type: **not specified**

## Overview $g - 2$

*Wednesday, 7 June 2023 14:00 (50 minutes)*

**Presenter:** HOFERICHTER, Martin (University of Bern)

**Session Classification:** Introduction and overview

Contribution ID: 2

Type: **not specified**

## **Workstop/thinkstart activities: towards a NNLO MC generator for low-energy $e^+e^- \rightarrow$ hadrons**

*Wednesday, 7 June 2023 15:00 (20 minutes)*

**Presenter:** VENANZONI, Graziano (University of Liverpool)

**Session Classification:** Introduction and overview

Contribution ID: 3

Type: **not specified**

## Experimental overview

*Wednesday, 7 June 2023 16:00 (40 minutes)*

**Presenter:** DRIUTTI, Anna (University and INFN Pisa)

**Session Classification:** Experiments

Contribution ID: 4

Type: **not specified**

## Status of dispersive approach

*Thursday, 8 June 2023 14:00 (40 minutes)*

**Presenter:** Prof. TEUBNER, Thomas (University of Liverpool)

**Session Classification:** Hadrons

Contribution ID: 5

Type: **not specified**

## WP1: leptonic processes at NNLO & beyond

*Thursday, 8 June 2023 16:30 (15 minutes)*

**Presenter:** TORRES BOBADILLA, William (Max-Planck-Institut für Physik)

**Session Classification:** Loops in QED

Contribution ID: 6

Type: **not specified**

## WP2: Form factor contributions at $N^3LO$

*Thursday, 8 June 2023 16:45 (15 minutes)*

**Presenter:** ENGEL, Tim (Uni Freiburg)

**Session Classification:** Loops in QED

Contribution ID: 7

Type: **not specified**

## Closing remarks and drinks

*Friday, 9 June 2023 16:10 (50 minutes)*



Contribution ID: 8

Type: **not specified**

## WP3: Processes with hadrons

*Thursday, 8 June 2023 16:00 (20 minutes)*

**Presenter:** STOFFER, Peter (UZH and PSI)

**Session Classification:** Hadrons

Contribution ID: 9

Type: **not specified**

## WP4: parton shower

*Friday, 9 June 2023 14:00 (20 minutes)*

**Presenter:** CARLONI CALAME, Carlo (INFN, Pavia (IT))

**Session Classification:** Parton showers

Contribution ID: **10**

Type: **not specified**

## Experimental MUonE

*Friday, 9 June 2023 15:00 (20 minutes)*

**Presenters:** ABBIENDI, Giovanni (INFN Bologna); ABBIENDI, Giovanni (INFN Bologna)

**Session Classification:** MUonE

Contribution ID: **11**

Type: **not specified**

## Theoretical MUonE

*Friday, 9 June 2023 15:50 (20 minutes)*

**Presenter:** ROCCO, Marco (PSI - Paul Scherrer Institut)

**Session Classification:** MUonE

Contribution ID: 12

Type: **not specified**

## **Feasibility Studies for an Inclusive $R$ -Measurement using ISR with BESIII**

*Wednesday, 7 June 2023 16:50 (20 minutes)*

**Presenter:** LENZ, Thomas (JGU Mainz)

**Session Classification:** Experiments

Contribution ID: **13**

Type: **not specified**

## **CMD-3**

*Wednesday, 7 June 2023 17:20 (20 minutes)*

**Presenter:** IGNATOV, Fedor (University of Liverpool)

**Session Classification:** Experiments

Contribution ID: **14**

Type: **not specified**

## Lattice overview

*Thursday, 8 June 2023 14:50 (30 minutes)*

**Presenter:** PARATO, Letizia (ETH Zurich)

**Session Classification:** Hadrons

Contribution ID: 15

Type: **not specified** $e^+e^- \rightarrow \gamma\gamma^*$  **at two loops in massless QED***Thursday, 8 June 2023 17:10 (20 minutes)*

We present an analytic computation of  $e^+e^- \rightarrow \gamma\gamma^*$  at two loops in massless QED. We reconstruct the analytic form of the amplitudes from numerical evaluations over finite fields. We express the integrals in a basis of Goncharov polylogarithms to obtain compact expressions. These contributions are required for N<sup>3</sup>LO predictions of the inclusive process  $e^+e^- \rightarrow \gamma^*$  and for NNLO corrections for ISR measurements of  $e^+e^- \rightarrow \gamma\gamma^*$ .

**Presenter:** MOODIE, Ryan (Turin University)**Session Classification:** Loops in QED



Contribution ID: 16

Type: **not specified**

## Photon splitting corrections to soft-photon resummation

*Friday, 9 June 2023 14:30 (20 minutes)*

In this talk I will motivate the importance of including QED corrections in a systematic and automated manner. I will present an algorithm to add photon-splitting corrections to the Yennie-Frautschi-Suura-style soft-photon resummation available in the Sherpa Monte-Carlo event generator. Then, I will introduce different lepton dressing strategies which incorporate further leptons and hadrons in addition to the customary photons, and discuss their sensitivity to dressing parameters such as the cone size. I will then present some results for academic and realistic setups.

**Presenter:** FLOWER, Lois (Durham University)

**Session Classification:** Parton showers

Contribution ID: 17

Type: **not specified**

## Lattice MUonE

*Friday, 9 June 2023 15:30 (10 minutes)*

**Presenter:** KOMIJANI, Javad (ETH Zurich)

**Session Classification:** MUonE