

# **Future Collider Forum: 1st Workshop**

## **Report of Contributions**

Contribution ID: 2

Type: **not specified**

# Introduction

*Wednesday 6 October 2021 09:00 (20 minutes)*

**Presenter:** SIMON, Frank (Max-Planck-Institute for Physics)

**Session Classification:** Machine Session: Future Accelerators

Contribution ID: 3

Type: **not specified**

## High field magnets

*Wednesday 6 October 2021 09:30 (25 minutes)*

**Presenter:** BOTTURA, Luca (CERN)

**Session Classification:** Machine Session: Future Accelerators

Contribution ID: 4

Type: **not specified**

## **FCC-ee: Merits and Challenges**

*Wednesday 6 October 2021 10:10 (25 minutes)*

**Presenter:** ZIMMERMANN, Frank (CERN)

**Session Classification:** Machine Session: Future Accelerators

Contribution ID: 5

Type: **not specified**

## Muon Collider

*Wednesday 6 October 2021 11:05 (25 minutes)*

**Presenter:** SCHULTE, Daniel (CERN)

**Session Classification:** Machine Session: Future Accelerators

Contribution ID: 8

Type: **not specified**

## Introduction to the physics case

*Friday 8 October 2021 09:00 (25 minutes)*

**Presenter:** KRÄMER, Michael (RWTH Aachen)

**Session Classification:** Physics Session

Contribution ID: 9

Type: **not specified**

## Tools for Physics studies

*Friday 8 October 2021 09:40 (25 minutes)*

**Presenter:** MADLENER, Thomas (FLC (FTX Fachgruppe SFT))

**Session Classification:** Physics Session

Contribution ID: **10**

Type: **not specified**

## **Detector concepts for Linear Colliders: Status and New Technologies**

*Thursday 7 October 2021 09:00 (25 minutes)*

**Presenter:** VALLEE, Claude (CPPM/DESY)

**Session Classification:** Detector Session



Contribution ID: **11**

Type: **not specified**

## **Detector Development for Linear and Circular Colliders**

*Thursday 7 October 2021 09:40 (25 minutes)*

**Presenter:** Dr SEFKOW, Felix (DESY)

**Session Classification:** Detector Session

Contribution ID: 12

Type: **not specified**

## A Study of Top Anomalous Couplings at the FCC-ee

*Friday 8 October 2021 11:10 (15 minutes)*

The FCC-ee as one of the proposed future  $e^+e^-$  colliders offers indirect sensitivity to new physics at an unprecedented precision. The couplings of the top quark are of particular interest as it is the heaviest particle in the entire Standard Model suggesting it might couple more strongly to BSM fields. In this study, the expected sensitivity to top anomalous couplings at the FCC-ee is determined. The sensitivity is gauged in the semileptonic channel for top pair produced events in simulated datasets generated with FCCSW in the experimental environment of the IDEA detector at  $\sqrt{s} = 365$  GeV. Jet performance studies consider various jet definitions with work flowing back into FCCAnalyses to reevaluate jet tools in future works. Event reconstruction is performed, an event selection developed, and a kinematic fit is applied using a software package written in connection with the analysis. The 1sigma confidence intervals are determined for a minimal set of top anomalous couplings. The intervals are found from the observables of angular distributions and total cross sections for each coupling separately.

**Primary author:** TORNDAL, Julie (DESY / University of Copenhagen (NBI))**Presenter:** TORNDAL, Julie (DESY / University of Copenhagen (NBI))**Session Classification:** Physics Session**Track Classification:** Physics Track

Contribution ID: 13

Type: **not specified**

## Status of electroweak computations wrt numerical treatment of Feynman integrals

*Friday 8 October 2021 10:45 (15 minutes)*

We are working on a computational set up to perform electroweak corrections at the three-loop level. The goal is to cover the computation of three-loop corrections contributing to the pseudo observables which are well defined at the Z-boson resonance.

We would like to present the actual blueprint for the numerical evaluation of Feynman integrals and we are confident, that these ideas can be transferred to other projects dealing with radiative corrections.

**Primary author:** USOVITSCH, Johann (CERN)

**Co-authors:** Prof. GLUZA, Janusz (Katowize); Prof. FREITAS, Ayres (Pittsburgh); Dr HIDDING, Martijn (Uppsala); Mr GRZANKA, Krysztof (Katowize); Mr DUBOVYK, Ievgen (Katowize)

**Presenter:** USOVITSCH, Johann (CERN)

**Session Classification:** Physics Session

**Track Classification:** Physics Track

Contribution ID: 14

Type: **not specified**

## Di-Higgs with missing transverse momentum at FCC-hh

*Friday 8 October 2021 11:35 (15 minutes)*

The determination of the Higgs self-coupling from di-Higgs events is one of the clearest benchmarks for the FCC-hh. Its potential has been well established already in several final states. In this talk studies into final states of the di-Higgs system which involve neutrinos are presented. The inclusion of additional final states will help to improve the precision of the self-coupling measurement even further, and specifically neutrino channels will help to shed light on an experimental aspect for the FCC-hh which has not been well investigated yet: a robust reconstruction of the missing transverse momentum (ETMiss) is crucial for such analyses. It is clear that ETMiss reconstruction at the FCC-hh will be extremely challenging due to the high pile-up environment, with the average interactions per bunch crossing expected to be of the order of 1000. First investigations into possible final states, their event selections and potential are presented, which in future can then be used to derive benchmark scenarios for the ETMiss reconstruction performance.

**Primary authors:** STAPF, Birgit (ATLAS (LHC Experiment ATLAS)); GALLO-VOSS, Elisabetta (CMS (CMS-Experiment)); TACKMANN, Kerstin (BELLE (BELLE Gruppe))

**Presenter:** STAPF, Birgit (ATLAS (LHC Experiment ATLAS))

**Session Classification:** Physics Session

**Track Classification:** Physics Track

Contribution ID: 15

Type: **not specified**

# EuPRAXIA - The European ESFRI Plasma Accelerator Facility

*Wednesday 6 October 2021 11:45 (20 minutes)*

**Presenter:** ASSMANN, Ralph (MPY1 (MPY Fachgruppe 1))

**Session Classification:** Machine Session: Future Accelerators

Contribution ID: **16**

Type: **not specified**

## **ILC Positron Source and Plasma Lenses**

*Wednesday 6 October 2021 12:15 (20 minutes)*

**Presenter:** MOORTGAT-PICK, Gudrid (FLC (Technol. zukuenft. Teilchenph. Experm.))

**Session Classification:** Machine Session: Future Accelerators

Contribution ID: 17

Type: **not specified**

## Open Discussion

*Thursday 7 October 2021 10:20 (40 minutes)*

**Session Classification:** Detector Session