11th FCC-ee workshop: Theory and Experiments

Report of Contributions
MDI Overview

Tuesday, 8 January 2019 14:00 (30 minutes)

**Presenter:** BOSCOLO, Manuela (INFN e Laboratori Nazionali di Frascati (IT))

**Session Classification:** Experiments
Luminosity Measurement

Tuesday, 8 January 2019 14:30 (25 minutes)

Presenter: DAM, Mogens (University of Copenhagen (DK))
Session Classification: Experiments
CLD Status and Next Steps. Tracking

Tuesday, 8 January 2019 15:20 (30 minutes)

Presenter:  LEOGRANDE, Emilia (CERN)
Session Classification:  Experiments
CLD Status and Next Steps. Calorimetry

Tuesday, 8 January 2019 15:50 (30 minutes)

Presenter: VIAZLO, Oleksandr (CERN)
Session Classification: Experiments
Tracking performance with the updated geometry of the IDEA detector

Tuesday, 8 January 2019 16:50 (25 minutes)

Presenter: TASSIELLI, Giovanni F. (INFN Lecce / Università del Salento)
Session Classification: Experiments
Expected performance of the IDEA dual-readout calorimeter

Tuesday, 8 January 2019 17:15 (25 minutes)

Presenters: GAUDIO, Gabriella (Dipartimento di Fisica Nucleare e Teorica); GAUDIO, Gabriella (INFN-Pavia); PEZZOTTI, Lorenzo (Università and INFN (IT))

Session Classification: Experiments
IDEA test beam results

Tuesday, 8 January 2019 17:40 (25 minutes)

Presenter: SANTORO, Romualdo (CERN)
Session Classification: Experiments
Contribution ID: 9

Type: not specified

Discussion

Tuesday, 8 January 2019 18:05 (55 minutes)

Session Classification: Experiments
Detector concepts, relation of LHC detector R&D to $e^+e^-$ detectors

Wednesday, 9 January 2019 09:00 (30 minutes)

Presenter: RIEGLER, Werner (CERN)

Session Classification: Experiments
Silicon development in ALICE

*Wednesday, 9 January 2019 09:30 (30 minutes)*

**Presenter:** MUSA, Luciano (CERN)

**Session Classification:** Experiments
Liquid Argon Calorimetry for e+e- detectors

Wednesday, 9 January 2019 11:00 (30 minutes)

Presenter: ALEKSA, Martin (CERN)
Session Classification: Experiments
mu3e tracker and possibilities of future progress on light weight high resolution silicon trackers

Wednesday, 9 January 2019 10:00 (30 minutes)

Presenter:  SCHOENING, Andre (Ruprecht Karls Universitaet Heidelberg (DE))
Session Classification:  Experiments
CALICE

Wednesday, 9 January 2019 11:30 (30 minutes)

Presenter: SIMON, Frank (Max-Planck-Institut fuer Physik)
Session Classification: Experiments
Magnet Technology development

Wednesday, 9 January 2019 12:00 (30 minutes)

Presenter:  TEN KATE, Herman (CERN)
Session Classification:  Experiments
Strategic R&D Programme on Technologies for future Experiments

Wednesday, 9 January 2019 12:30 (30 minutes)

Presenter: JORAM, Christian (CERN)
Session Classification: Experiments
Physics requirements: Z and WW electroweak

Wednesday, 9 January 2019 14:00 (25 minutes)

Presenters: AZZURRI, Paolo (INFN Sezione di Pisa, Universita’ e Scuola Normale Superiore, P); AZZURRI, Paolo (S); TENCHINI, Roberto (INFN Sezione di Pisa, Universita’ e Scuola Normale Superiore, P)

Session Classification: Experiments
Physics requirements: Higgs and top

Wednesday, 9 January 2019 16:00 (25 minutes)

Presenter: PETERS, Krisztian (Deutsches Elektronen-Synchrotron (DE))
Session Classification: Experiments
Physics requirements: flavour physics

Wednesday, 9 January 2019 14:25 (25 minutes)

Presenter: MONTEIL, Stephane (Université Clermont Auvergne (FR))
Session Classification: Experiments
New developments in silicon pixel detectors

Wednesday, 9 January 2019 16:25 (25 minutes)

Presenter: Prof. BORTOLETTO, Daniela (University of Oxford (GB))
Session Classification: Experiments
The SiD Detector - solutions and motivations

Wednesday, 9 January 2019 16:50 (25 minutes)

Presenter: STANITZKI, Marcel (Deutsches Elektronen-Synchrotron (DE))

Session Classification: Experiments
Gas detector comparison and R&D

Wednesday, 9 January 2019 17:15 (25 minutes)

Presenter: GRANCAGNOLO, Francesco (INFN)
Session Classification: Experiments
Dual Readout Calorimeter options

Wednesday, 9 January 2019 17:40 (25 minutes)

Presenter:  FERRARI, Roberto (INFN Pavia (IT))
Session Classification:  Experiments
The Belle2 TOP PID detector

Wednesday, 9 January 2019 14:50 (20 minutes)

Presenter: Dr MUSSA, Roberto (INFN Torino)
Session Classification: Experiments
Contribution ID: 25

Type: not specified

Discussion

Wednesday, 9 January 2019 18:30 (30 minutes)

Session Classification: Experiments
Welcome

Tuesday, 8 January 2019 11:15 (10 minutes)

Presenter: GIANOTTI, Fabiola (CERN)
Session Classification: Plenary
goals of meeting and agenda

Tuesday, 8 January 2019 11:00 (15 minutes)

Presenter:  BLONDEL, Alain (Universite de Geneve (CH))
Session Classification:  Plenary
The FCC project

Tuesday, 8 January 2019 11:25 (30 minutes)

Presenter: BENEDIKT, Michael (CERN)
Session Classification: Plenary
FCC-ee design and performance

Tuesday, 8 January 2019 11:55 (30 minutes)

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

**Session Classification:** Plenary
Introduction to theory parallel sessions

Tuesday, 8 January 2019 12:55 (15 minutes)

Presenter: GLUZA, Janusz (U. Silesia)
Session Classification: Plenary
Contribution ID: 31

**introduction to detector parallel session**

*Tuesday, 8 January 2019 13:10 (15 minutes)*

**Presenter:** DAM, Mogens (University of Copenhagen (DK))

**Session Classification:** Plenary
Determinatiion of the QED coupling constant at the Z scale

*Tuesday, 8 January 2019 14:00 (30 minutes)*

**Presenters:** JGERLEHNER, Fred (Deutsches Elektronen-Synchrotron DESY); JGERLEHNER, Fred; JGERLEHNER, Fred (Unknown)

**Session Classification:** Theory
alpha_s extractions at FCC-ee

Tuesday, 8 January 2019 14:30 (30 minutes)

Presenter: D’ENTERRIA, David (CERN)
Session Classification: Theory
Heavy quarkonia production at Fcc-ee

Tuesday, 8 January 2019 15:00 (30 minutes)

Presenter: HE, Zhinguo (Hamburg U.)
Session Classification: Theory
QCD with event shapes and jet rates

Tuesday, 8 January 2019 15:30 (30 minutes)

Presenters: GEHRMANN, Thomas; GEHRMANN, Thomas (Univ. Zurich); GEHRMANN, Thomas Kurt (Universitaet Zuerich (CH))

Session Classification: Theory
SM Precision Predictions for partial Higgs Decay Widths

Tuesday, 8 January 2019 16:30 (30 minutes)

Presenters: SPIRA, Michael (Paul Scherrer Institut (CH)); SPIRA, Michael (Unknown)

Session Classification: Theory
Theory predictions for WW production near threshold

Tuesday, 8 January 2019 17:00 (30 minutes)

Presenter: SCHWINN, Christian (RWTH Aachen University)
Session Classification: Theory
W mass and the effective weak mixing angle

Presenters: VICINI, Alessandro (Università degli Studi e INFN Milano (IT)); VICINI, Alessandro (University of Milano)

Session Classification: Theory
Axion-like particles at the FCC-ee

Tuesday, 8 January 2019 18:00 (30 minutes)

Presenter: THAMM, Andrea (CERN)
Session Classification: Theory
Contribution ID: 40

Type: not specified

Discussion

Tuesday, 8 January 2019 18:30 (30 minutes)

Session Classification: Theory
Numerical calculations for elliptic Feynman integrals

Wednesday, 9 January 2019 09:00 (25 minutes)

Presenter: WEINZIERL, Stefan (Universität Mainz)
Session Classification: Theory
Unsubtractions at NNLO

Wednesday, 9 January 2019 09:25 (25 minutes)

Presenter: RODRIGO, German (IFIC CSIC-UV)

Session Classification: Theory
NNLO corrections in 4 dimensions

*Wednesday, 9 January 2019 09:50 (25 minutes)*

**Presenter:** PITTAU, Roberto (Universidad de Granada (ES))

**Session Classification:** Theory
Recent progress on the calculation of two-loop five-point Master Integrals

Wednesday, 9 January 2019 10:15 (25 minutes)

**Presenter:** PAPADOPOULOS, Konstantinos (Nat. Cent. for Sci. Res. Demokritos (GR))

**Session Classification:** Theory
Analytics from Numerics: 5-Point QCD Amplitudes at Two Loops

Wednesday, 9 January 2019 11:35 (25 minutes)

Presenters: PAGE, Ben (University of Freiburg); PAGE, Benjamin John (Universidad de Granada (ES))

Session Classification: Theory
Laporta algorithm for multi-loop vs multi-scale problems

Wednesday, 9 January 2019 12:00 (25 minutes)

Presenters: USOVITSCH, Johann; Mr USOVITSCH, Johann (Trinity College Dublin)

Session Classification: Theory
Numerical Multi-loop Calculations: Sector Decomposition & QMC Integration in pySecDec

Wednesday, 9 January 2019 12:25 (20 minutes)

Presenters:  JONES, Stephen; JONES, Stephen (MPI, Munich)

Session Classification: Theory
1-loop Feynman integrals at arbitrary space-time $d$

Wednesday, 9 January 2019 11:10 (25 minutes)

**Presenter:** RIEMANN, Tord (University of Silesia (PL))

**Session Classification:** Theory
(Triple) Higgs-coupling imprints at lepton colliders

Wednesday, 9 January 2019 16:25 (25 minutes)

Presenter: Dr BAGLIO, Julien (University of Tübingen (DE))

Session Classification: Theory
Dark Matter and Axion-like particles

Wednesday, 9 January 2019 16:50 (25 minutes)

Presenter: XUE, Wei (CERN)

Session Classification: Theory
CoDEx - understanding BSM physics as SMEFT

Wednesday, 9 January 2019 17:45 (25 minutes)

Presenter: SUPRATIM DAS BAKSHI (IIT Kanpur)
Session Classification: Theory
Global EFT

Wednesday, 9 January 2019 18:10 (25 minutes)

**Presenters:** YOU, Tevong (University of Cambridge); YOU, Tiann Tevong (Imperial College Sci., Tech. & Med. (GB))

**Session Classification:** Theory
SM Effective field theory fits at the FCC

Wednesday, 9 January 2019 18:35 (25 minutes)

Presenters:  DE BLAS, Jorge (INFN-Padova); Dr DE BLAS, Jorge (University of Padova); DE BLAS, Jorge (Universita e INFN, Padova (IT)); Dr DE BLAS, Jorge (University of Padova)

Session Classification:  Theory
Next-to-leading power resummation

Presenter: SZAFRON, Robert (TU München)
Session Classification: Theory
Contribution ID: 55

Type: not specified

discussion

Wednesday, 9 January 2019 19:00 (30 minutes)

Session Classification: Theory
Mixed QCD-QED resummation effects at higher-orders

Thursday, 10 January 2019 09:00 (25 minutes)

**Presenter:** SBORLINI, German (Università di Milano, INFN Milano and IFIC-Valencia)

**Session Classification:** Theory
Charm, bottom and top masses

Thursday, 10 January 2019 09:25 (25 minutes)

Presenters: STEINHAUSER, Matthias (KIT); STEINHAUSER, Matthias (KIT)

Session Classification: Theory
**CoLoRFuNNLO at work: determination of alphaS**

*Thursday, 10 January 2019 09:50 (25 minutes)*

**Presenter:** KARDOS, Adam (University of Debrecen)

**Session Classification:** Theory
FCC-ee discovery potential

Tuesday, 8 January 2019 12:25 (30 minutes)

Presenter: JANOT, Patrick (CERN)
Session Classification: Plenary
Top pair production and mass determination

Thursday, 10 January 2019 10:15 (25 minutes)

Presenter: MAIER, Andreas (DESY)
Session Classification: Theory
The shower-cut dependence of the top quark mass

Thursday, 10 January 2019 11:00 (25 minutes)

Presenter:  SAMITZ, Daniel (University of Vienna)
Session Classification:  Theory
Determination of top couplings with NLO fit

Thursday, 10 January 2019 11:25 (25 minutes)

Presenters: VRYONIDOU, Eleni (CERN); VRYONIDOU, Eleni (University of Cambridge); VRYONIDOU, Eleni (Nikhef); VRYONIDOU, Eleni (Universite catholique de Louvain)

Session Classification: Theory
One-loop electroweak radiative corrections to polarized $e^+e^- \rightarrow ZH$

*Thursday, 10 January 2019 11:50 (25 minutes)*

**Presenter:** DYZYSHKA, Yahor (Byelorussian State University (BY))

**Session Classification:** Theory
Exotic Higgs decays

Thursday, 10 January 2019 12:15 (25 minutes)

Presenter: ZURITA, José Francisco (KIT)
Session Classification: Theory
WHIZARD generator for precision e-e+ simulations

Thursday, 10 January 2019 14:20 (25 minutes)

Presenter:  REUTER, Jürgen (DESY Hamburg, Germany)
Session Classification:  Plenary
KoralW and YFSWW3 - lessons from LEP2 for FCCee

Thursday, 10 January 2019 14:45 (25 minutes)

Presenter: SKRZYPEK, Maciej (Polish Academy of Sciences (PL))
Session Classification: Plenary
tau event generators

Thursday, 10 January 2019 15:35 (25 minutes)

**Presenter:** WAS, Zbigniew Andrzej (Polish Academy of Sciences (PL))

**Session Classification:** Plenary
tau physics at FCC-ee

Thursday, 10 January 2019 15:10 (25 minutes)

Presenter: DAM, Mogens (University of Copenhagen (DK))

Session Classification: Plenary
$e^+e^- \rightarrow \gamma\gamma$ at large angle for FCC-ee luminometry

Thursday, 10 January 2019 16:30 (25 minutes)

Presenters:  CARLONI CALAME, Carlo Michel;  CARLONI CALAME, Carlo Michel;  CARLONI CALAME, Carlo Michel (INFN, Pavia (IT));  Dr CARLONI CALAME, Carlo Michel (INFN - National Institute for Nuclear Physics)

Session Classification:  Plenary
The Path to 0.01% Theoretical Luminosity Precision for the FCC-ee

Thursday, 10 January 2019 16:55 (25 minutes)

Presenters: WARD, Bennie; WARD, Bennie (Baylor University (US))

Session Classification: Plenary
Summary generators

Thursday, 10 January 2019 17:20 (25 minutes)

Presenter:  JADACH, Staszek (Polish Academy of Sciences (PL))

Session Classification:  Plenary
Plans for Simulation and Reconstruction

Thursday, 10 January 2019 09:00 (10 minutes)

Presenter: AZZI, Patrizia (INFN Padova (IT))
Session Classification: Experiments
FCC Software Framework & vision for the future

Thursday, 10 January 2019 09:10 (20 minutes)

Presenter: CERVANTES VILLANUEVA, Javier (CERN)
Session Classification: Experiments
MDI and background studies with IDEA tracker

Thursday, 10 January 2019 09:30 (20 minutes)

**Presenter:** ALIPOUR TEHRANI, Niloufar (CERN)

**Session Classification:** Experiments
Dual Readout Calorimeter Full Simulation Status

Thursday, 10 January 2019 10:10 (20 minutes)

Presenter: PEZZOTTI, Lorenzo (Universita and INFN (IT))

Session Classification: Experiments
CLIC/CLD Software for simulation and event reconstruction

Thursday, 10 January 2019 11:45 (20 minutes)

Presenters:  SAILER, Andre (CERN); PETRIC, Marko (CERN)
Session Classification:  Experiments
Delphes Fast Simulation status for the IDEA detector

Thursday, 10 January 2019 11:25 (20 minutes)

Primary author: FONTANESI, Elisa (Universita e INFN, Bologna (IT))
Presenter: FONTANESI, Elisa (Universita e INFN, Bologna (IT))
Session Classification: Experiments
Tracking in the IDEA chamber

Thursday, 10 January 2019 09:50 (20 minutes)

Presenter: TASSIELLI, Giovanni F. (INFN Lecce / Università del Salento)
Session Classification: Experiments
General Discussion and next steps

Thursday, 10 January 2019 12:05 (30 minutes)

Session Classification: Experiments
TORCH: a new concept for PID

Wednesday, 9 January 2019 15:10 (20 minutes)

Presenter: FORTY, Roger (CERN)
Session Classification: Experiments
Tile Dual Readout Calorimeter

Wednesday, 9 January 2019 18:05 (25 minutes)

**Presenter:** ONEL, Yasar (University of Iowa (US))

**Session Classification:** Experiments
Measuring the triple higgs coupling at FCC-ee and importance of EW precision measurements

Presenter: GROJEAN, Christophe (DESY (Hamburg) and Humboldt University (Berlin))

Session Classification: Theory
Precise Higgs physics beyond SM

Wednesday, 9 January 2019 15:30 (30 minutes)

Presenter: HEINEMEYER, Sven (CSIC (Madrid, ES))

Session Classification: Theory
Neutrino physics

Wednesday, 9 January 2019 16:00 (25 minutes)

Presenters:  RUIZ, Richard (Universite Catholique de Louvain);  RUIZ, Richard (University of Louvain);  RUIZ, Richard (Fermi National Accelerator Lab. (US))

Session Classification:  Theory
Tea

Wednesday, 9 January 2019 17:15 (30 minutes)

Session Classification: Theory
summary of detector session: present efforts and lessons learned

Friday, 11 January 2019 10:50 (25 minutes)

Presenter: DAM, Mogens (University of Copenhagen (DK))
Session Classification: Plenary
summary of detector session; detector technologies and CERN R&D plans

Friday, 11 January 2019 11:15 (25 minutes)

Presenter: RIEGLER, Werner (CERN)

Session Classification: Plenary
Discussion

Thursday, 10 January 2019 17:45 (30 minutes)

Session Classification: Plenary
summary of discussions on detector studies and R&D at FCC-ee

Friday, 11 January 2019 11:40 (25 minutes)

Presenter: BEDESCHI, Franco (Università & INFN Pisa (IT))
Session Classification: Plenary
EWPOs: Looking back and looking forward

Presenter: JADACH, Staszek (Polish Academy of Sciences (PL))
Session Classification: Plenary
Summary of precision QCD issues

Friday, 11 January 2019 09:25 (25 minutes)

Presenter: D’ENTERRIA, David (CERN)
Session Classification: Plenary
Going forward with software

Friday, 11 January 2019 12:05 (25 minutes)

Presenter: AZZI, Patrizia (INFN Padova (IT))
Session Classification: Plenary
Going forward with theory

Friday, 11 January 2019 09:50 (25 minutes)

Presenter:  GLUZA, Janusz (University of Silesia (PL))
Session Classification:  Plenary
Meeting summary and next steps

Friday, 11 January 2019 14:10 (25 minutes)

**Presenter:** BLONDEL, Alain (Universite de Geneve (CH))

**Session Classification:** Plenary
discussion

Friday, 11 January 2019 14:35 (25 minutes)

Session Classification: Plenary
CEPC simulations and tools

Thursday, 10 January 2019 11:00 (25 minutes)

**Presenter:** RUAN, Manqi (Chinese Academy of Sciences (CN))

**Session Classification:** Experiments
summary of event generator requests

Thursday, 10 January 2019 14:00 (20 minutes)

**Presenter:** BLONDEL, Alain (Universite de Geneve (CH))

**Session Classification:** Plenary
FCC – The dream machine

Friday, 11 January 2019 13:30 (40 minutes)

Presenter: WULZER, Andrea (CERN)
Session Classification: Plenary
Next-to-leading power resummation

Tuesday, 8 January 2019 17:30 (30 minutes)

Presenter: SZAFRON, Robert (TU München)
Session Classification: Theory
ee-Learning: what leptons can teach us about high-energy physics

Wednesday, 9 January 2019 14:00 (1 hour)

Presenter:  GROJEAN, Christophe (DESY (Hamburg) and Humboldt University (Berlin))

Session Classification:  Theory
Coffee

Session Classification: Theory
Contribution ID: 102
Type: not specified

Coffee

Wednesday, 9 January 2019 15:00 (30 minutes)

Session Classification: Theory