

# **Muon Collider Physics Workshop**

## **Report of Contributions**

Contribution ID: 0

Type: **not specified**

## Message from the Director

*Tuesday, 10 November 2009 14:45 (15 minutes)*

**Presenter:** ODDONE, Pier (Fermilab)

**Session Classification:** Joint Session with Project X Workshop - Estia Eichten (Session Chair)  
- 1 West

Contribution ID: 1

Type: **not specified**

## **Muon Collider: Physics Motivation**

*Tuesday, 10 November 2009 15:30 (45 minutes)*

**Presenter:** LYKKEN, Joseph (Fermilab)

**Session Classification:** Joint Session with Project X Workshop - Estia Eichten (Session Chair)  
- 1 West

Contribution ID: 2

Type: **not specified**

## **Muon Collider: Complex**

*Tuesday, 10 November 2009 16:15 (45 minutes)*

**Presenter:** ZISMAN, Michael (LBNL)

**Session Classification:** Joint Session with Project X Workshop - Estia Eichten (Session Chair)  
- 1 West

Contribution ID: 3

Type: **not specified**

## **Muon Collider: Machine - Detector Interface**

*Tuesday, 10 November 2009 17:00 (45 minutes)*

**Presenter:** MOKHOV, Nikolai (Fermilab)

**Session Classification:** Joint Session with Project X Workshop - Estia Eichten (Session Chair)  
- 1 West

Contribution ID: 4

Type: **not specified**

## CLIC Overview

*Wednesday, 11 November 2009 08:30 (40 minutes)*

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

**Session Classification:** Plenary Session - Ken Peach (Session Chair) - 1 West

Contribution ID: 5

Type: **not specified**

## **Issues for Machine-Detector Interface**

*Wednesday, 11 November 2009 09:10 (30 minutes)*

**Presenter:** SERYI, Andrei (SLAC)

**Session Classification:** Plenary Session - Ken Peach (Session Chair) - 1 West

Contribution ID: 6

Type: **not specified**

## **Muon Collider Detector: Old Design and New Developments**

*Wednesday, 11 November 2009 09:40 (30 minutes)*

**Presenter:** DEMARTEAU, Marcel (Fermilab)

**Session Classification:** Plenary Session - Ken Peach (Session Chair) - 1 West



Contribution ID: 7

Type: **not specified**

## **ILC and CLIC Detector R&D**

*Thursday, 12 November 2009 08:30 (30 minutes)*

**Presenter:** YAMAMOTO, Hitoshi (Tohoku University)

**Session Classification:** Plenary Session - Franco Grancagnolo (Session Chair) - 1 West

Contribution ID: 8

Type: **not specified**

## Synergy in Detector Design Efforts

*Thursday, 12 November 2009 09:00 (30 minutes)*

Panel Discussion

**Presenters:** YAMAMOTO, Hitoshi (Tohoku University); DEMARTEAU, Marcel (Fermilab); GRAF, Norman (SLAC)

**Session Classification:** Plenary Session - Franco Grancagnolo (Session Chair) - 1 West

Contribution ID: 9

Type: **not specified**

## Simulation Framework

*Thursday, 12 November 2009 09:30 (30 minutes)*

**Presenter:** MATO, Pere (CERN)

**Session Classification:** Plenary Session - Franco Grancagnolo (Session Chair) - 1 West

Contribution ID: **10**

Type: **not specified**

## **Working Group Summary: Machine-Detector Interface**

*Thursday, 12 November 2009 16:20 (20 minutes)*

**Presenters:** MOKHOV, Nikolai (Fermilab); PALMER, Robert (BNL)

**Session Classification:** Plenary Session - Jacobo Konigsberg (Session Chair) - 1 West

Contribution ID: 11

Type: **not specified**

## Concluding Remarks

*Thursday, 12 November 2009 17:00 (20 minutes)*

**Presenters:** EICHTEN, Estia; GEER, Steve; KIM, Young-Kee (Fermilab)

**Session Classification:** Plenary Session - Jacobo Konigsberg (Session Chair) - 1 West

Contribution ID: 12

Type: **not specified**

## Particle Fluxes from Muon-Muon Collisions

*Wednesday, 11 November 2009 14:10 (20 minutes)*

**Presenter:** STRIGANOV, Sergei (Fermilab)

**Session Classification:** Joint Session (WG2 - Detector, WG3 - MDI) - 1West

Contribution ID: 13

Type: **not specified**

## **MARS15 Modeling of Machine-Induced Backgrounds**

*Wednesday, 11 November 2009 13:50 (20 minutes)*

**Presenter:** ALEXAKHIN, Vadim (Fermilab)

**Session Classification:** Joint Session (WG2 - Detector, WG3 - MDI) - 1West

Contribution ID: 14

Type: **not specified**

## Collider Ring and IR Design

*Wednesday, 11 November 2009 13:30 (20 minutes)*

**Presenter:** ALEXAHIN, Yuri (Fermilab)

**Session Classification:** Joint Session (WG2 - Detector, WG3 - MDI) - 1West



Contribution ID: 15

Type: **not specified**

## **Combined-function first, elliptical emittance IR**

*Wednesday, 11 November 2009 16:00 (30 minutes)*

**Presenter:** JOHNSTONE, Carol (Fermilab)

**Session Classification:** WG3 - Machine-Detector Interface - Snake Pit 2NE

Contribution ID: 16

Type: **not specified**

## **MDI: CLIC Approach**

*Wednesday, 11 November 2009 16:30 (30 minutes)*

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

**Session Classification:** WG3 - Machine-Detector Interface - Snake Pit 2NE

Contribution ID: 17

Type: **not specified**

## **MDI: ILC Approach**

*Wednesday, 11 November 2009 17:00 (30 minutes)*

**Presenter:** SERYI, Andrei (SLAC)

**Session Classification:** WG3 - Machine-Detector Interface - Snake Pit 2NE

Contribution ID: **18**

Type: **not specified**

## **Calibrating the Energy at IP using Spin Precession**

*Wednesday, 11 November 2009 17:30 (30 minutes)*

**Presenter:** RAJA, Rajendran (Fermilab)

**Session Classification:** WG3 - Machine-Detector Interface - Snake Pit 2NE

Contribution ID: 19

Type: **not specified**

## **High-gradient permanent magnet IR quadrupoles**

*Thursday, 12 November 2009 11:20 (25 minutes)*

**Presenter:** O'SHEA, Finn (UCLA)

**Session Classification:** WG3 - Machine-Detector Interface - Snake Pit 2NE

Contribution ID: 20

Type: **not specified**

## IR Magnets

*Thursday, 12 November 2009 10:30 (25 minutes)*

**Presenter:** ZLOBIN, Sasha (Fermilab)

**Session Classification:** WG3 - Machine-Detector Interface - Snake Pit 2NE

Contribution ID: 21

Type: **not specified**

## High field HTS open midplane Dipole

*Thursday, 12 November 2009 10:55 (25 minutes)*

**Presenter:** GUPTA, Ramesh (BNL)

**Session Classification:** WG3 - Machine-Detector Interface - Snake Pit 2NE

Contribution ID: 22

Type: **not specified**

## High Gradient Quadrupoles using Exotic Materials

*Thursday, 12 November 2009 11:45 (25 minutes)*

**Presenter:** PALMER, Robert (BNL)

**Session Classification:** WG3 - Machine-Detector Interface - Snake Pit 2NE



Contribution ID: 24

Type: **not specified**

## Discussion

*Thursday, 12 November 2009 13:30 (2 hours)*

**Session Classification:** WG3 - Machine-Detector Interface - Snake Pit 2NE

Contribution ID: **31**

Type: **not specified**

## Calorimetry

*Thursday, 12 November 2009 10:30 (30 minutes)*

**Presenter:** HAUPTMAN, John (Iowa State University)

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover

Contribution ID: **32**

Type: **not specified**

## Calorimetry

*Thursday, 12 November 2009 11:00 (30 minutes)*

**Presenter:** DI BENEDETTO, Vito (INFN-Lecce)

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover

Contribution ID: 33

Type: **not specified**

## Crystal Calorimetry

*Thursday, 12 November 2009 11:30 (30 minutes)*

**Presenter:** WENZEL, Hans (Fermilab)

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover

Contribution ID: 37

Type: **not specified**

## **Simulation and Performance of Detectors**

*Wednesday, 11 November 2009 14:50 (20 minutes)*

**Presenter:** GATTO, Corrado (INFN-Lecce)

**Session Classification:** Joint Session (WG2 - Detector, WG3 - MDI) - 1West

Contribution ID: **38**

Type: **not specified**

## **W-Z Reconstruction**

*Wednesday, 11 November 2009 17:30 (30 minutes)*

**Presenter:** MAZZACANE, Anna (INFN-Lecce)

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover

Contribution ID: 39

Type: **not specified**

## Discussion

*Thursday, 12 November 2009 12:00 (30 minutes)*

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover

Contribution ID: 40

Type: **not specified**

## Discussion, Plans

*Thursday, 12 November 2009 15:00 (30 minutes)*

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover



Contribution ID: 41

Type: **not specified**

## Report - Action Items

*Thursday, 12 November 2009 14:30 (30 minutes)*

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover

Contribution ID: 46

Type: **not specified**

## Physics simulation tools

*Thursday, 12 November 2009 14:00 (30 minutes)*

**Presenter:** MRENNNA, Stephen (Fermilab)

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover

Contribution ID: 48

Type: **not specified**

## **(A/H) Higgs Factory, Possible CP Violation and 6D Cooling**

*Wednesday, 11 November 2009 13:35 (25 minutes)*

**Presenter:** CLINE, David (UCLA)

**Session Classification:** WG1 - Physics - Racetrack - 7N Crossover

Contribution ID: 49

Type: **not specified**

## Tests of the uplifted Higgs region

*Wednesday, 11 November 2009 14:00 (20 minutes)*

**Presenter:** DOBRESU, Bogdan (Fermilab)

**Session Classification:** WG1 - Physics - Racetrack - 7N Crossover

Contribution ID: 50

Type: **not specified**

## **Tree-level Higgs FCNC's in RS models**

*Wednesday, 11 November 2009 14:20 (20 minutes)*

**Presenter:** TOHARIA, Manuel (Maryland)

**Session Classification:** WG1 - Physics - Racetrack - 7N Crossover

Contribution ID: 51

Type: **not specified**

## **Leptophilic Higgs phenomenology at both hadron and muon colliders**

*Wednesday, 11 November 2009 14:40 (20 minutes)*

**Presenter:** THOMAS, Brooks (U of Arizona)

**Session Classification:** WG1 - Physics - Racetrack - 7N Crossover

Contribution ID: 52

Type: **not specified**

## Discussion

*Wednesday, 11 November 2009 15:10 (20 minutes)*

**Session Classification:** WG1 - Physics - Racetrack - 7N Crossover

Contribution ID: 53

Type: **not specified**

## SUSY at ILC

*Wednesday, 11 November 2009 16:00 (20 minutes)*

**Presenter:** GAINER, James (Northwestern & Argonne)

**Session Classification:** WG1 - Physics - Curia II (2SW)



Contribution ID: 54

Type: **not specified**

## **Resonant Higgs boson interference in chargino production**

*Wednesday, 11 November 2009 16:20 (20 minutes)*

**Presenter:** KITTEL, Olaf (Granada U.)

**Session Classification:** WG1 - Physics - Curia II (2SW)

Contribution ID: 55

Type: **not specified**

## **Probing CP-violating MSSM Higgs mixing at the Muon Collider**

*Wednesday, 11 November 2009 16:40 (20 minutes)*

(remote talk)

**Presenter:** VON DER PAHLEN, Federico (Buenos Aires)

**Session Classification:** WG1 - Physics - Curia II (2SW)

Contribution ID: 56

Type: **not specified**

## Discussion

*Wednesday, 11 November 2009 17:20 (40 minutes)*

**Session Classification:** WG1 - Physics - Curia II (2SW)

Contribution ID: 57

Type: **not specified**

## 4th family revisited

*Thursday, 12 November 2009 10:30 (20 minutes)*

**Presenter:** BURDMAN, Gustavo (Fermilab & Sao Paulo)

**Session Classification:** WG1 - Physics - 1 West

Contribution ID: 58

Type: **not specified**

## Heavy leptons and $Z'/W'$ in Randall-Sundrum

*Thursday, 12 November 2009 10:50 (20 minutes)*

**Presenter:** HUANG, GuiYu (UC Davis)

**Session Classification:** WG1 - Physics - 1 West

Contribution ID: 59

Type: **not specified**

## Z' physics

*Thursday, 12 November 2009 11:10 (20 minutes)*

**Presenter:** QUACKENBUSH, Seth (Argonne)

**Session Classification:** WG1 - Physics - 1 West

Contribution ID: **60**

Type: **not specified**

## Discussion

*Thursday, 12 November 2009 11:55 (35 minutes)*

**Session Classification:** WG1 - Physics - 1 West

Contribution ID: **61**

Type: **not specified**

## **Lepton Flavor Violation and SUSY Dark Matter**

*Thursday, 12 November 2009 13:30 (20 minutes)*

**Presenter:** MUSTAFAYEV, Azar (U. of Minnesota)

**Session Classification:** WG1 - Physics - 1 West



Contribution ID: 62

Type: **not specified**

## Leptonic Higgs Portal of Dark Matter

*Thursday, 12 November 2009 13:50 (20 minutes)*

**Presenter:** GOH, Hock Seng (LBNL)

**Session Classification:** WG1 - Physics - 1 West

Contribution ID: 63

Type: **not specified**

## **Indications of dark matter from astrophysical observations**

*Thursday, 12 November 2009 14:10 (20 minutes)*

**Presenter:** GAO, Yu (UW Madison)

**Session Classification:** WG1 - Physics - 1 West

Contribution ID: **64**

Type: **not specified**

## Discussion

*Thursday, 12 November 2009 14:50 (40 minutes)*

**Session Classification:** WG1 - Physics - 1 West

Contribution ID: **66**

Type: **not specified**

## **Tools for Calculations and Simulations**

*Wednesday, 11 November 2009 11:10 (20 minutes)*

**Presenter:** MRENNNA, Stephen (Fermilab)

**Session Classification:** Joint Session (WG1-Physics, WG2-Detectors, WG3-MDI) - Steve Geer (Session Chair) - 1 West

Contribution ID: 67

Type: **not specified**

## Detector Design Strategies

*Wednesday, 11 November 2009 10:50 (20 minutes)*

**Presenter:** HAUPTMAN, John (Iowa State Univ.)

**Session Classification:** Joint Session (WG1-Physics, WG2-Detectors, WG3-MDI) - Steve Geer (Session Chair) - 1 West

Contribution ID: **68**

Type: **not specified**

## **Machine Parameters**

*Wednesday, 11 November 2009 10:30 (20 minutes)*

**Presenter:** PALMER, Robert (BNL)

**Session Classification:** Joint Session (WG1-Physics, WG2-Detectors, WG3-MDI) - Steve Geer (Session Chair) - 1 West

Contribution ID: **69**

Type: **not specified**

## **General discussion**

*Wednesday, 11 November 2009 11:30 (1 hour)*

**Session Classification:** Joint Session (WG1-Physics, WG2-Detectors, WG3-MDI) - Steve Geer (Session Chair) - 1 West

Contribution ID: 70

Type: **not specified**

## **Novel accelerator magnets compatible with high energy deposition**

*Thursday, 12 November 2009 12:10 (20 minutes)*

**Presenter:** MEINKE, Rainer (AML)

**Session Classification:** WG3 - Machine-Detector Interface - Snake Pit 2NE



Contribution ID: 71

Type: **not specified**

## 50-T solenoid

*Wednesday, 11 November 2009 14:30 (20 minutes)*

**Presenter:** HAUPTMAN, John (Iowa State Univ.)

**Session Classification:** Joint Session (WG2 - Detector, WG3 - MDI) - 1West

Contribution ID: 72

Type: **not specified**

## Vertex Detector and Tracking

*Wednesday, 11 November 2009 16:00 (30 minutes)*

**Presenter:** LIPTON, Ronald (Fermilab)

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover

Contribution ID: 73

Type: **not specified**

## Near zero mass cluster-timing Drift Chamber

*Wednesday, 11 November 2009 16:30 (30 minutes)*

**Presenter:** GRANCAGNOLO, Francesco (INFN - Lecce)

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover

Contribution ID: 74

Type: **not specified**

## **ILCroot: Infrastructure for Large Collider based on root**

*Wednesday, 11 November 2009 17:00 (30 minutes)*

**Presenter:** GATTO, Corrado (INFN)

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover

Contribution ID: 75

Type: **not specified**

## Discussion

*Wednesday, 11 November 2009 15:10 (20 minutes)*

**Session Classification:** Joint Session (WG2 - Detector, WG3 - MDI) - 1West

Contribution ID: 78

Type: **not specified**

## Project X: Workshop Summary

*Tuesday, 10 November 2009 15:00 (30 minutes)*

**Presenter:** KUNO, Yoshi (Osaka University)

**Session Classification:** Joint Session with Project X Workshop - Estia Eichten (Session Chair)  
- 1 West

Contribution ID: 79

Type: **not specified**

## **ALCPG Physics and Detector Response Simulation Tools**

*Thursday, 12 November 2009 13:30 (30 minutes)*

**Presenter:** GRAF, Norman (SLAC)

**Session Classification:** WG2 - Detectors - Racetrack 7N Crossover

Contribution ID: **80**

Type: **not specified**

# **Electroweak Baryogenesis, Dark Matter, and a Muon Collider**

*Thursday, 12 November 2009 14:30 (20 minutes)*

**Presenter:** RAMSEY-MUSOLF, Michael (UW Madison)

**Session Classification:** WG1 - Physics - 1 West



Contribution ID: **81**

Type: **not specified**

## **FCNC, CP violation & more at the muon collider**

*Thursday, 12 November 2009 11:30 (25 minutes)*

**Presenter:** SONI, Amarjit (BNL)

**Session Classification:** WG1 - Physics - 1 West

Contribution ID: **82**

Type: **not specified**

## **tau-mu flavor transition**

*Wednesday, 11 November 2009 15:00 (10 minutes)*

**Presenter:** SHER, Marc (College of William and Mary)

**Session Classification:** WG1 - Physics - Racetrack - 7N Crossover

Contribution ID: **84**

Type: **not specified**

## **Working Group Summary: Physics**

*Thursday, 12 November 2009 16:00 (20 minutes)*

**Presenters:** FREITAS, Ayres (University of Pittsburgh); HAN, Tao (UW Madison)

**Session Classification:** Plenary Session - Jacobo Konigsberg (Session Chair) - 1 West

Contribution ID: 85

Type: **not specified**

## **Working Group Summary: Detectors**

*Thursday, 12 November 2009 16:40 (20 minutes)*

**Presenters:** HAUPTMAN, John (Iowa State University); KLIMENKO, Sergey (University of Florida)

**Session Classification:** Plenary Session - Jacobo Konigsberg (Session Chair) - 1 West

Contribution ID: **86**

Type: **not specified**

## **Expectations for Supersymmetry after the LHC**

*Wednesday, 11 November 2009 17:00 (20 minutes)*

**Presenter:** STEPHEN MARTIN

**Session Classification:** WG1 - Physics - Curia II (2SW)

Contribution ID: **88**

Type: **not specified**

## Introductory remarks

*Wednesday, 11 November 2009 13:30 (5 minutes)*

**Presenter:** FREITAS, Ayres (University of Pittsburgh)

**Session Classification:** WG1 - Physics - Racetrack - 7N Crossover