

# Mu2e-II Workshop (vi) - Introduction

Frank Porter  
December 9, 2020  
DocDB-36285

**This meeting will be recorded**

# Mu2e-II workshops

Workshop dates	Links to recordings
Thursday, June 18 <a href="https://mu2e-docdb.fnal.gov/cgi-bin/sso/DisplayMeeting?conferenceid=9755">https://mu2e-docdb.fnal.gov/cgi-bin/sso/DisplayMeeting?conferenceid=9755</a>	AM: <a href="https://caltech.box.com/s/b67edbgtxofaujuoorafm4kfq9owhjd">https://caltech.box.com/s/b67edbgtxofaujuoorafm4kfq9owhjd</a> PM: <a href="https://caltech.box.com/s/vnsm9nh7qroznt3n6q5n3sn4ut1bswo5">https://caltech.box.com/s/vnsm9nh7qroznt3n6q5n3sn4ut1bswo5</a>
Wednesday, July 29 <a href="https://indico.fnal.gov/event/44541/">https://indico.fnal.gov/event/44541/</a>	<a href="https://caltech.box.com/s/k45jik5i7uztq2letmaxb93fq3arl0kf">https://caltech.box.com/s/k45jik5i7uztq2letmaxb93fq3arl0kf</a>
Wednesday, August 26 <a href="https://indico.fnal.gov/event/44997/">https://indico.fnal.gov/event/44997/</a>	<a href="https://caltech.box.com/s/ws8hkzmjo96xlnile8q27yphb87nlpjp">https://caltech.box.com/s/ws8hkzmjo96xlnile8q27yphb87nlpjp</a>
Wednesday, September 23 <a href="https://indico.fnal.gov/event/45632/">https://indico.fnal.gov/event/45632/</a>	<a href="https://caltech.zoom.us/rec/play/_xbOzK448M0VhhDArf9UE8AjiOKdshh4et0tYOOhtViPn3qveG95CkQUOHQ0_SzeJ8pxVzw5M0PolvjD.I-zdhaNXvu3i5SII?autoplay=true&amp;startTime=1600873315000">https://caltech.zoom.us/rec/play/_xbOzK448M0VhhDArf9UE8AjiOKdshh4et0tYOOhtViPn3qveG95CkQUOHQ0_SzeJ8pxVzw5M0PolvjD.I-zdhaNXvu3i5SII?autoplay=true&amp;startTime=1600873315000</a>
Wednesday, October 28 <a href="https://indico.fnal.gov/event/45937/">https://indico.fnal.gov/event/45937/</a>	<a href="https://caltech.zoom.us/rec/share/zCGxa2uJwAKwONXm7pyiqrrLPJvixTaNHkY2cxHRDjtm_bmWOYgraV8D9ynUMATk.JNeSkLhSj4-Hfcof">https://caltech.zoom.us/rec/share/zCGxa2uJwAKwONXm7pyiqrrLPJvixTaNHkY2cxHRDjtm_bmWOYgraV8D9ynUMATk.JNeSkLhSj4-Hfcof</a>
Wednesday, December 9 <a href="https://indico.fnal.gov/event/46433/">https://indico.fnal.gov/event/46433/</a>	
Wednesday, January 27	

# Working Groups

Mu2e-II working groups	Convenors
Theory <a href="mailto:mu2eii-theory@fnal.gov">mu2eii-theory@fnal.gov</a>	Julian Heeck Lorenzo Calibbi
Accelerator (including PS, production target, extinction) <a href="mailto:mu2e-ii-accelerator@fnal.gov">mu2e-ii-accelerator@fnal.gov</a>	Karie Badgley David Neuffer Eric Prebys
Radiation mitigation (includes radiation simulation) <a href="mailto:mu2eii-radiation@fnal.gov">mu2eii-radiation@fnal.gov</a>	Vitaly Pronskikh Michael MacKenzie Stefan Mueller
Tracker <a href="mailto:mu2eii-tracker@fnal.gov">mu2eii-tracker@fnal.gov</a>	Daniel Ambrose Giovanni Tassielli
Calorimeter (and STM?) <a href="mailto:mu2eii-calorimeter@listserv.fnal.gov">mu2eii-calorimeter@listserv.fnal.gov</a>	Ivano Sarra Luca Morescalchi David Hitlin
CRV <a href="mailto:mu2eii-crv@listserv.fnal.gov">mu2eii-crv@listserv.fnal.gov</a>	Yuri Oksuzian Craig Dukes
Sensitivity estimate (includes simulation, stopping target) <a href="mailto:mu2e-ii-sensitivity@listserv.fnal.gov">mu2e-ii-sensitivity@listserv.fnal.gov</a>	Lisa Goodenough Sophie Middleton Yuri Oksuzian
Trigger and DAQ <a href="mailto:mu2eii-tdaq@listserv.fnal.gov">mu2eii-tdaq@listserv.fnal.gov</a>	Giani Pezzullo Antonio Gioiosa

# Accelerator

Karie Badgley, Convenor, FNAL

David Neuffer, Convenor, FNAL

Eric Prebys, Convenor, UCD

Mary Anne Cummings, Muons, Inc.

Keegan Harrig, UCD

Andrei Gaponenko, FNAL

Vadim Kashikhin, FNAL

Kevin Lynch, CUNY

James Popp, CUNY

Diktys Stratakis, FNAL

# Radiation simulation and mitigation

Michael MacKenzie, Convenor, Northwestern

Vitaly Pronskikh, Convenor, FNAL

Stefan Mueller, Convenor, HZDR

James Popp, CUNY

David Pushka, FNAL

Anna Ferrari, Reuven Rachamin, HZDR

Vadim Kashikhin, FNAL

Yuri Oksuzian – CRV

Sophie Middleton – Sensitivity

Giani Pezzullo - TDAQ

# Theory

Julian Heeck, Convenor, Uva

Lorenzo Calibbi, Convenor, Nankai U

Robert Szafron, CERN

Yuichi Uesaka, Kyushu Sangyo University

# Tracker

Daniel Ambrose, Convenor, UMinn

Giovanni Tassielli, Convenor, INFN Lecce

David Brown, LBNL

Brendan Casey, FNAL

Manolis Kargiantoulakis, FNAL

Mete Yucel, FNAL

Tracker meetings every two weeks on Tuesdays 11AM CT  
Next meeting Jan 5, 2021

# Calorimeter

David Hitlin, Convenor, Caltech

Luca Morescalchi, Convenor, INFN Pisa

Ivano Sarra, Convenor, LNF

Leo Borrell, Bertrand Echenard, Dexu Lin, Sophie Middleton,  
James Oyang, Frank Porter, Liyuan Zhang, Renyuan Zhu, Caltech

Eleonara Diociaiuti, Raffaella Donghia, Simona Giovannella,  
Fabio Happacher, Stefano Miscetti, LNF

Stefano Di Falco, Simone Donati, Antonio Gioiosa, Elena  
Pedreschi, Franco Spinella, INFN Pisa

Next calorimeter meeting Jan 12, 2021, 1000 CT



# Cosmic Ray Veto

Craig Dukes, Convenor, Uva

Yuri Oksuzian, Convenor, ANL

Karen Byrum, Simon Corrodi, Peter Winter, Lei Xia, ANL

Raymond Culbertson, Gary Drake, Anna Pla-Dalmau, Greg Rakness, FNAL

Akram Artikov, Yuri Davydov, JINR, Dubna

Timothy Bolton, Glenn Horton-Smith, Yurii Maravin, Kres Neely, KSU

Gerald Blazey, Kurt Francis, Sergey Uzunyan, Vishnu Zutshi, NIU

Merrill Jenkins, U South Alabama

Steven Boi, Ralf Ehrlich, Stephen Goadhouse, Craig Group, UVa

CRV workshop: Friday, December 11 (10-12 CT) (contact: Yuri Oksuzian)

# Trigger/DAQ

Gianantonio Pezzullo, Convenor, Yale

Antonio Gioiosa, Convenor, INFN Pisa

Richard Bonventre, LBNL

Rebecca Chislett, UCL, [Tracker](#)

Raffaella Donghia, LNF

Bertrand Echenard, Caltech

Ryan Rivera, FNAL

Franco Spinella, INFN Pisa – [Calorimeter](#)

Craig Dukes, UVa - [CRV](#)

# Sensitivity estimates

Lisa Goodenough, Convenor, FNAL

Sophie Middleton, Convenor, Caltech

Yuri Oksuzian, Convenor, ANL

Rebecca Chislett, UCL

Michael Hedges, Purdue

Cole Kampa, Northwestern

Manolis Kargiantoulakis, FNAL

Michael MacKenzie, Northwestern

# Production solenoid

- Karie Badgley has agreed to co-convene accelerator working group
- Vadim Kashikhin has joined the accelerator and the radiation working groups

Vadim Kashikhin will make a presentation at this workshop on the production solenoid

# Contributed Paper

- Next (and final) product is Contributed Paper, deadline July 31, 2021
  - Schedule subject to change according to ongoing community discussion
  - Desirable to have something ready as input to Rare Frontier meeting in early June 2021
  - Contributed papers are required to be on the arXiv
  - Planning to produce a decent draft by May 1, 2021
  - Will prepare an outline and framework on Overleaf (read link):  
<https://www.overleaf.com/read/mrbgttkmfgvq>
  - Ask me if you would like edit link

<https://snowmass21.org/submissions/start>

# Contributed Paper – Proposed Top Level Outline

- I. Overview
  - II. Theory
  - III. Accelerator and beam line
  - IV. Production target and environment
  - V. Solenoids
  - VI. Radiation
  - VII. Tracking
  - VIII. Calorimetry
  - IX. Cosmic ray veto
  - X. Trigger and Data Acquisition
  - XI. Physics sensitivity
- References

# Future Mu2e-II/Snowmass21 Events of interest

- Thursday, December 10, 2020 (9AM-1PMCT): CLFV – CLFV with high intensity muon factory
- **CRV workshop: Friday, December 11 (10-12 CT) (contact: Yuri Oksuzian)**
- Tuesday, December 15, 2020 (1-3PM CT) Beam Physics with a Booster Accumulator Ring
- January TBD, 2021 (10-12 CT): AF2/AF5/AF7/RP/NP target workshop (contact: Eric Prebys) <https://indico.fnal.gov/event/46752/>
- **Wednesday, January 27, 2021 (10AM-2PM CT): Mu2e-II workshop**
- Early June 2021 at Cincinatti: Rare/precision frontier meeting
- 2021 Snowmass Summer Study (July 11 - 20, 2021 at UW Seattle)

# Mu2e-II Communication

- Public wiki page: <https://mu2eiiwiki.fnal.gov>
  - Please email Lisa if you wish to have write access
- Private Wiki
  - Has been created:  
[https://mu2eii-internal-wiki.fnal.gov/wiki/Main\\_Page](https://mu2eii-internal-wiki.fnal.gov/wiki/Main_Page)
    - SSO log-on
    - Need to contact Lisa or Frank to request access
    - Help request to find out how to manage this
  - Want to add a Mu2e-II calendar with links
- Mu2e-II mailing list: [mu2eii@listserv.fnal.gov](mailto:mu2eii@listserv.fnal.gov)
- Mu2e-II Slack channel invite link:
  - [https://join.slack.com/t/caltech-tka1525/shared\\_invite/zt-glsr3405-OondWg0KCpBoUJwlr2uyJw](https://join.slack.com/t/caltech-tka1525/shared_invite/zt-glsr3405-OondWg0KCpBoUJwlr2uyJw)



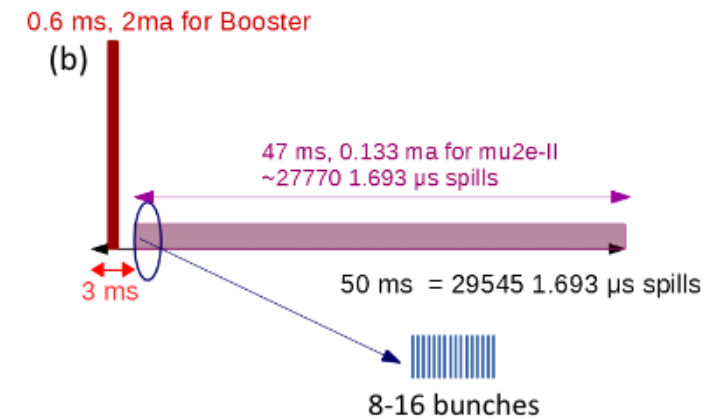
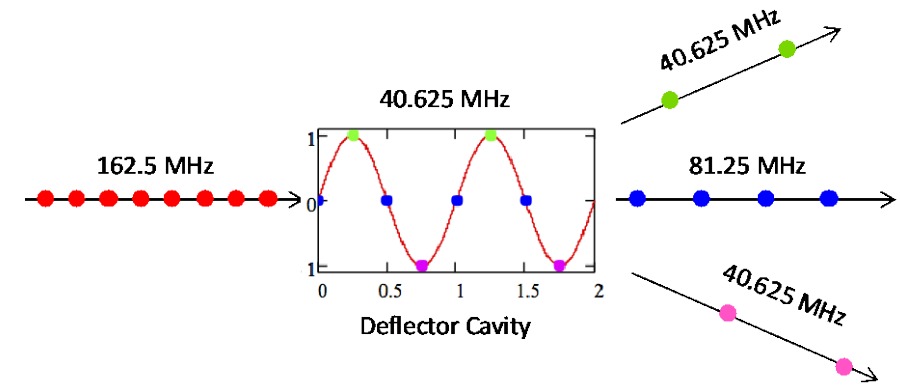
# Proposed Mu2e-II beam nomenclature

- Follow accelerator group usage
- Beam delivery is different than Mu2e

Quantity	Name
Beam in one PIP-II RF bucket (162.5 MHz)	Bunch
PIP-II pulse (20 Hz/0.55 ms)	Pulse (but see below)*
Mu2e-II repetition (e.g., 1693 ns)	Spill (also pulse, but see above)**
Set of bunches in one spill (e.g., 8)	Burst (also pulse, but see above)**

\*One PIP-II pulse is about 27770 Mu2e-II spills; suggest saying “PIP-II pulse” to avoid confusion.

\*\*“Pulse” may be used when distinction is not important



Eric Prebys

<https://indico.fnal.gov/event/44997/>

David Neuffer, DocDB 33896

# December 9 Mu2e-II workshop agenda

When (CT)	Who	What
10:00-10:20	Frank Porter	Introduction
10:20-11:00	Vadim Kashikhin	Production solenoid
11:00-11:15	Sophie Middleton	Sensitivity
11:15-11:45	Julian Heeck	Theory
11:45-12:00	Giani/Antonio	TDAQ
11:55-12:30	All	Break
12:30-12:40	Ivano Sarra	Calorimeter
12:40-13:05	Daniel Ambrose	Tracker (report from Dec 8 workshop)
13:05-13:10	Yuri Oksuzian	CRV
13:10-13:25	David Neuffer	Accelerator
13:25-14:00	Vitaly (20 min)/Michael/Stefan	Radiation & targets (20 min Vitaly + update)
14:00	All	End

[Indico timetable at: https://indico.fnal.gov/event/46433/](https://indico.fnal.gov/event/46433/)

Next Mu2e-II workshop:  
Wednesday, January 27, 2021

# Additional Material

# Mu2e-II Snowmass21 Committee

Name	Institution	Email
Dan Ambrose	U Minn	ambrose0028@gmail.com
Rebecca Chislett	UC London	rebecca.chislett@ucl.ac.uk
Lisa Goodenough	FNAL	goodenou@fnal.gov
Julian Heeck	U Virginia	julian.heeck@gmail.com
David Neuffer	FNAL	neuffer@fnal.gov
Yuri Oksuzian	ANL	yoksuzian@anl.gov
Frank Porter (chair)	Caltech	fcp@caltech.edu
Giovanni Tassielli	INFN-Lecce	giovani.tassielli@le.infn.it
Robert Bernstein (ex officio)	FNAL	rhbob@fnal.gov
Jim Miller (ex officio)	Boston U	miller@bu.edu

# Calendar

Wiki already has a calendar of Mu2e-II workshops:

- [https://mu2eiiwiki.fnal.gov/wiki/Calendar\\_of\\_Workshops](https://mu2eiiwiki.fnal.gov/wiki/Calendar_of_Workshops)

Also, Rare frontier has a calendar:

- [https://snowmass21.org/rare/start#calendar\\_of\\_meetings](https://snowmass21.org/rare/start#calendar_of_meetings)

Proposing to provide an editable Mu2e-II calendar on the private Wiki page

- Working group meetings and workshops
- Ad hoc working meetings
- Convenor meetings
- Committee meetings
- Related Snowmass21 events
- Include links to Zoom, agendas