

Mu2e-II Workshop (v) - Introduction

Frank Porter
October 28, 2020
DocDB-nnnnn

This meeting will be recorded

Thanks to Becky Chislett, Eric Prebys, and Leo Borrell, Mu2e-II was well-represented at the rare frontier town hall on October 2; as well as Sophie Middleton for Mu2e

Mu2e-II workshops

Nearby workshop dates	Links to recordings
Thursday, June 18 https://mu2e-docdb.fnal.gov/cgi-bin/sso/DisplayMeeting?conferenceid=9755	AM: https://caltech.box.com/s/b67edbgtxofaujuoorafm4kfq9owhjd PM: https://caltech.box.com/s/vnsm9nh7groznt3n6q5n3sn4ut1bswo5
Wednesday, July 29 https://indico.fnal.gov/event/44541/	https://caltech.box.com/s/k45jik5i7uztq2letmaxb93fq3arl0kf
Wednesday, August 26 https://indico.fnal.gov/event/44997/	https://caltech.box.com/s/ws8hkzmjo96xlnile8q27yphb87nlpjp
Wednesday, September 23 https://indico.fnal.gov/event/45632/	https://caltech.zoom.us/rec/play/_xbOzK448M0VhhDArf9UE8AjiOKdshh4et0tYOOhtViPn3qveG95CkQUOHQ0_SzeJ8pxVzw5M0PolvjD.l-zdhaNXvu3i5SII?autoplay=true&startTime=1600873315000
Wednesday, October 28 https://indico.fnal.gov/event/45937/	
Wednesday, December 9	

Working Groups

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

Accelerator

David Neuffer, Convenor, FNAL

Eric Prebys, Convenor, UCD

Mary Anne Cummings, Muons, Inc.

Keegan Harrig, UCD

Andrei Gaponenko, 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

Anna Ferrari, Reuven Rachamin, HZDR

Sophie Middleton – Sensitivity liaison

Yuri Oksuzian – CRV liaison

David Neuffer – Accelerator liaison

Gianantonio Pezzullo – TDAQ liaison

Ivano Sarra – Calorimeter liaison

Mete Yucel – Tracker liaison

Theory

Julian Heeck, Convenor, Uva

Lorenzo Calibbi, Convenor, Nankai U

Robert Szafron, CERN

Tracker

Daniel Ambrose, Convenor, UMinn

Giovanni Tassielli, Convenor, INFN Lecce

David Brown, LBNL

Brendan Casey, FNAL

Manolis Kargiantoulakis, FNAL

Mete Yucel, FNAL

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

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

Trigger/DAQ

Gianantonio Pezzullo, Convenor, Yale

Antonio Gioiosa, Convenor, INFN Pisa

Richard Bonventre, LBNL

Rebecca Chislett, UCL, **Tracker liaison**

Raffaella Donghia, LNF

Bertrand Echenard, Caltech

Ryan Rivera, FNAL

Franco Spinella, INFN Pisa – **Calorimeter liaison**

Craig Dukes, UVa – **CRV liaison**

Sensitivity estimates group members

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

- We are pursuing the idea of another working group addressing the solenoids (mainly the production solenoid and associated HRS)

Vadim Kashikhin will make a presentation at our December 9 workshop on the production solenoid

Snowmass21 Contributed Paper

- Next (and final) product for Snowmass21 is a Contributed Paper, deadline July 31, 2021
 - Desirable to have something ready as input to Rare Frontier meeting in June 2021
 - Planning to produce a decent draft by May 1, 2021
 - Top level outline and framework on Overleaf (read link):
<https://www.overleaf.com/read/mrbgttkmfgvq>

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

Mu2e-II workshop, Wednesday, Oct. 28

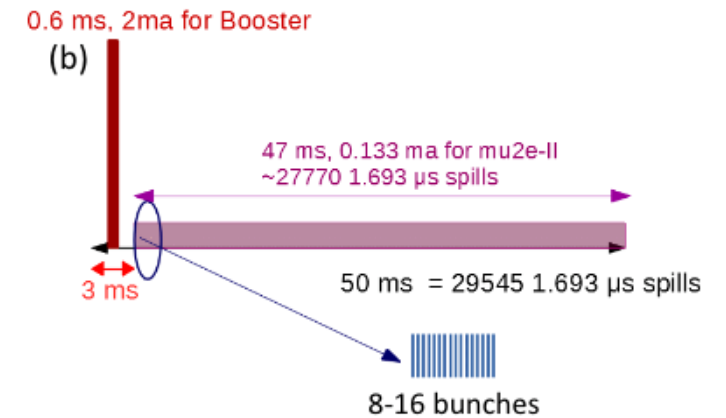
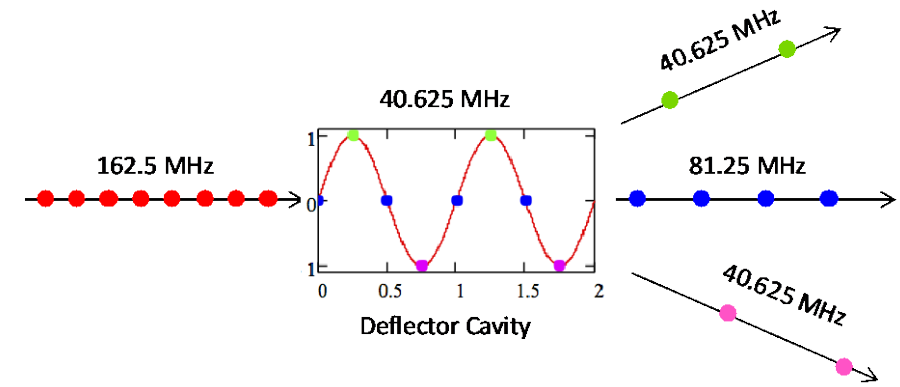
- Includes continued discussion of capability, issues, R&D to accept higher rate/more power

Suggested assumptions (“straw man”):

- Use the spill period of 1.7 microsecond assumed for an aluminum stopping target
- Factor of four increase in protons in a spill (over nominal), one factor of two from taking bunches at 162.5 MHz, and another factor of two from increasing the spill duration to 200 ns.

Issues to be concerned about include:

- power
- radiation
- rate
- backgrounds
- can we gain linearly in sensitivity



Eric Prebys

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

Mu2e-II Communication

- Public wiki page: <https://mu2eiiwiki.fnal.gov>
- Have also a private Wiki, working out some details
- Mu2e-II Slack channel invite link:
 - https://join.slack.com/t/caltech-tka1525/shared_invite/zt-glsr3405-OondWg0KCpBoUJwlr2uyJw
- Mu2e-II mailing list: mu2eii@listserv.fnal.gov

Future Mu2e-II/Snowmass21 Events of interest

- Date TBA (maybe November): CLFV – CLFV with high intensity muon factory
- **Wednesday, December 9, 2020 (10AM-2PM CT): Mu2e-II workshop**
- June 2021: Rare/precision frontier meeting
- 2021 Snowmass Summer Study (July 11 - 20, 2021 at UW Seattle)

Tracker workshop being scheduled for first week of December (contact: Dan Ambrose)

CRV workshop being scheduled around second week of December (contact: Yuri Oksuzian)

October 28 Mu2e-II workshop agenda

When (CT)	Who	What
10:00-10:20	Frank Porter	Introduction
10:20-10:50	Ryan Plestid	Radiative muon capture
10:50-11:05	Sophie Middleton	sensitivity
11:05-11:30	Daniel Ambrose	Tracker
11:30-11:50	David Hitlin	Calorimeter
11:50-12:30	All	Break
12:30-12:55	Yuri Oksuzian	CRV
12:55-13:10	Giani Pezzullo Antonio Gioiosa	TDAQ
13:10-13:35	Vitaly Pronskikh	MARS simulations
13:35-14:00	Stefan Mueller	Fluka simulations
14:00	All	End

Indico timetable at: <https://indico.fnal.gov/event/45937/>

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

Also, Rare frontier has a calendar:

- 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