

# Rare Pion Decay Workshop



## Report of Contributions

Contribution ID: 1

Type: **not specified**

## Registration and welcome

*Thursday 6 October 2022 08:30 (30 minutes)*

**Presenters:** Prof. SCHUMM, Bruce Andrew (University of California,Santa Cruz (US)); MAZZA, Simone Michele (University of California,Santa Cruz (US))

Contribution ID: 2

Type: **not specified**

## Welcome and orientation details

*Thursday 6 October 2022 09:00 (15 minutes)*

**Presenter:** Prof. SCHUMM, Bruce Andrew (University of California, Santa Cruz (US))

**Session Classification:** Rare decay physics

Contribution ID: 3

Type: **not specified**

## Intro and meeting goals

*Thursday 6 October 2022 09:15 (15 minutes)*

**Presenter:** HERTZOG, David (University of Washington)

**Session Classification:** Rare decay physics

Contribution ID: 4

Type: **not specified**

## Physics insights on RPD program

*Thursday 6 October 2022 09:30 (30 minutes)*

**Author:** MARCIANO, Bill

**Presenter:** MARCIANO, Bill

**Session Classification:** Rare decay physics

Contribution ID: 5

Type: **not specified**

## LFU tests across energy scales

*Thursday 6 October 2022 10:00 (30 minutes)*

**Presenter:** PICH, Toni

**Session Classification:** Rare decay physics

Contribution ID: 6

Type: **not specified**

## Meson decays as probes of light new physics

*Thursday 6 October 2022 10:50 (30 minutes)*

**Authors:** DROR, Asaf; Dr DROR, Jeff (Lawrence Berkeley National Laboratory)

**Presenters:** DROR, Asaf; Dr DROR, Jeff (Lawrence Berkeley National Laboratory); GORI, stefania (UC Santa Cruz)

**Session Classification:** Rare decay physics

Contribution ID: 7

Type: **not specified**

## Tests for sterile neutrino effects

*Thursday 6 October 2022 11:20 (30 minutes)*

**Presenter:** SHROCK, Robert (Stony Brook University)

**Session Classification:** Rare decay physics



Contribution ID: 8

Type: **not specified**

## Perspectives on $\pi \rightarrow e \nu$ Measurements

*Thursday 6 October 2022 11:50 (30 minutes)*

**Presenter:** BRYMAN, Douglas Andrew (University of British Columbia (CA))

**Session Classification:** Rare decay physics

Contribution ID: 9

Type: **not specified**

## Systematics from "old" muons

*Thursday 6 October 2022 12:20 (30 minutes)*

**Author:** MISCHKE, Richard

**Presenters:** MISCHKE, Dick; MISCHKE, Richard

**Session Classification:** Rare decay physics

Contribution ID: **10**

Type: **not specified**

## Systematics from DIF & PIENU tail

*Thursday 6 October 2022 13:50 (40 minutes)*

**Presenters:** SULLIVAN, Tristan (University of Victoria); SULLIVAN, Tristan; SULLIVAN, Tristan (University of Victoria (CA))

**Session Classification:** Systematics and beamline

Contribution ID: **11**

Type: **not specified**

## **PEN resolution MC vs real**

*Thursday 6 October 2022 14:30 (30 minutes)*

**Author:** GLASER, Charlie

**Presenters:** GLASER, Charles; GLASER, Charlie

**Session Classification:** Systematics and beamline

Contribution ID: 12

Type: **not specified**

## **PIONEER Modelling general results**

*Thursday 6 October 2022 15:00 (30 minutes)*

**Presenter:** LABOUNTY, Joshua

**Session Classification:** Systematics and beamline

Contribution ID: 13

Type: **not specified**

## Thoughts and experience with LXe and LYSO

*Thursday 6 October 2022 15:50 (30 minutes)*

**Presenters:** LIU, Jianglai; LIU, Jianglai; LIU, Jianglai (California Institute of Technology)

**Session Classification:** Systematics and beamline

Contribution ID: 14

Type: **not specified**

## Results from Run1 beam tests at PSI

*Thursday 6 October 2022 16:20 (30 minutes)*

**Presenter:** Dr SOTER, Anna (ETH Zürich)

**Session Classification:** Systematics and beamline

Contribution ID: 15

Type: **not specified**

## The beamline model and going forward

*Thursday 6 October 2022 16:50 (30 minutes)*

**Presenter:** KAMMEL, Peter

**Session Classification:** Systematics and beamline



Contribution ID: **16**

Type: **not specified**

## **The case for New Physics at PIONEER**

*Friday 7 October 2022 09:30 (30 minutes)*

**Presenters:** CRIVELLIN, Andreas (University Bern); CRIVELLIN, Andreas (University of Zurich (CH)); CRIVELLIN, Andreas

**Session Classification:** Theory and Calorimetry

Contribution ID: 17

Type: **not specified**

## **Status and prospects of the first-row CKM unitarity test**

*Friday 7 October 2022 09:00 (30 minutes)*

**Presenter:** HOFERICHTER, Martin (University of Washington)

**Session Classification:** Theory and Calorimetry

Contribution ID: **18**

Type: **not specified**

## **MEG II LXe detector and simulation**

*Friday 7 October 2022 10:00 (13 minutes)*

**Presenter:** BAN, Sei

**Session Classification:** Theory and Calorimetry

Contribution ID: **19**

Type: **not specified**

## **LXe R&D and simulation for open and segmented system**

*Friday 7 October 2022 10:50 (30 minutes)*

**Presenters:** MALBRUNOT, Chloe (CERN); MALBRUNOT, Stephan (TRIUMF (CA))

**Session Classification:** Theory and Calorimetry

Contribution ID: **20**

Type: **not specified**

## LYSO bench tests

*Friday 7 October 2022 11:20 (20 minutes)*

**Author:** BEESLEY, Omar Basel

**Presenters:** -, Eric; -, Omar; BEESLEY, Omar Basel

**Session Classification:** Theory and Calorimetry

Contribution ID: 21

Type: **not specified**

## Simulations of LXe and Hybrid crystal wrt pileup

*Friday 7 October 2022 11:40 (30 minutes)*

**Presenter:** SCHWENDIMANN, Patrick

**Session Classification:** Theory and Calorimetry

Contribution ID: 22

Type: **not specified**

## Introduction to the ATAR project and session

*Friday 7 October 2022 13:10 (20 minutes)*

**Presenter:** MAZZA, Simone Michele (University of California,Santa Cruz (US))

**Session Classification:** Active target, timing and fast electronics

Contribution ID: 23

Type: **not specified**

## **High granularity fast silicon sensors for the active target**

*Friday 7 October 2022 13:30 (30 minutes)*

**Presenter:** Dr OTT, Jennifer (University of California,Santa Cruz (US))

**Session Classification:** Active target, timing and fast electronics



Contribution ID: 24

Type: **not specified**

## Fast silicon sensor simulation with TCAD software

*Friday 7 October 2022 15:20 (30 minutes)*

**Presenters:** NIZAM, Mohammad; Dr NIZAM, Mohammad (University of California Santa Cruz)

**Session Classification:** Active target, timing and fast electronics

Contribution ID: 25

Type: **not specified**

## Fast silicon studies at the PSI pion beam

**Presenter:** MOLNAR, Adam

**Session Classification:** Active target, timing and fast electronics

Contribution ID: 26

Type: **not specified**

## **Alternative active target design based on traditional silicon devices**

*Friday 7 October 2022 14:00 (20 minutes)*

**Presenters:** QIAN, Xin (Brookhaven National Laboratory); QIAN, Xin (Brookhaven National Laboratory (US))

**Session Classification:** Active target, timing and fast electronics

Contribution ID: 27

Type: **not specified**

## Event simulation and reconstruction in the active target

*Friday 7 October 2022 14:20 (20 minutes)*

**Presenter:** WONG, Vincent Wai Sum (TRIUMF (CA))

**Session Classification:** Active target, timing and fast electronics

Contribution ID: 28

Type: **not specified**

## Event reconstruction experience from Lar TPC

*Friday 7 October 2022 14:40 (20 minutes)*

**Presenters:** ZANG, Chao; Dr ZHANG, Chao (Brookhaven National Laboratory)

**Session Classification:** Active target, timing and fast electronics

Contribution ID: 29

Type: **not specified**

## Front end electronics and digitization for fast silicon

*Friday 7 October 2022 15:50 (20 minutes)*

**Presenter:** SEIDEN, Abraham (University of California,Santa Cruz (US))

**Session Classification:** Active target, timing and fast electronics

Contribution ID: **30**

Type: **not specified**

## Overview of BNL Silicon sensor capability

*Friday 7 October 2022 16:10 (10 minutes)*

**Presenters:** Dr GIACOMINI, Gabriele (Brookhaven National Laboratory (US)); GIACOMINI, Gabriele (Fondazione Bruno Kessler); GIACOMINI, Gabriele (BNL)

**Session Classification:** Active target, timing and fast electronics

Contribution ID: 31

Type: **not specified**

## **BNL approved LDRD related discussion and planning**

*Friday 7 October 2022 16:20 (10 minutes)*

**Author:** TISHCHENKO, Vladimir (Brookhaven National Laboratory)

**Presenters:** TISHCHENKO, Vladimir (Brookhaven National Laboratory); TISHCHENKO, Volodya

**Session Classification:** Active target, timing and fast electronics



Contribution ID: 32

Type: **not specified**

## Conclusions and discussion

*Friday 7 October 2022 16:30 (30 minutes)*

**Presenter:** MAZZA, Simone Michele (University of California,Santa Cruz (US))

**Session Classification:** Active target, timing and fast electronics

Contribution ID: 33

Type: **not specified**

## Measuring pion beta decay in PIONEER

*Saturday 8 October 2022 09:00 (30 minutes)*

**Presenters:** POCHANIC, Dinko (University of Virginia); POCHANIC, Dinko (University of Virginia (US)); Prof. POCHANIC, Dinko (University of Virginia)

**Session Classification:** Tracker, DAQ and future prospects

Contribution ID: **34**

Type: **not specified**

## Production plans at FBK

*Saturday 8 October 2022 10:40 (15 minutes)*

**Presenter:** CENTIS VIGNALI, Matteo (FBK)

**Session Classification:** Tracker, DAQ and future prospects

Contribution ID: 35

Type: **not specified**

## Tracker possibilities from Stony Brook

*Saturday 8 October 2022 10:00 (20 minutes)*

**Presenters:** Dr GARG, Prakhar (Stony Brook University); GARG, Prakhar (Stony Brook University); GARG, Prakhar (Stony Brook University)

**Session Classification:** Tracker, DAQ and future prospects

Contribution ID: 36

Type: **not specified**

## Electronics (Kevin) + trigger (Dieter)

*Saturday 8 October 2022 09:30 (30 minutes)*

**Authors:** RIES, Dieter (Johannes Gutenberg University Mainz); LABE, Kevin

**Presenters:** RIES, Dieter (Johannes Gutenberg University Mainz); RIES, Dieter (Paul Scherrer Institut); RIES, Dieter (Conseil Européen Recherche Nucl. (CERN)); RIES, Dieter (C); LABE, Kevin

**Session Classification:** Tracker, DAQ and future prospects

Contribution ID: 37

Type: **not specified**

## DAQ overview

*Saturday 8 October 2022 10:55 (20 minutes)*

**Author:** GORRINGE, Tim

**Presenter:** GORRINGE, Tim

**Session Classification:** Tracker, DAQ and future prospects

Contribution ID: **38**

Type: **not specified**

## **PIONEER going forward; R&D; next PSI; Small funding**

*Saturday 8 October 2022 11:15 (15 minutes)*

**Presenter:** HERTZOG, David (University of Washington)

**Session Classification:** Tracker, DAQ and future prospects

Contribution ID: 39

Type: **not specified**

## DISCUSSION of these Systematics

*Saturday 8 October 2022 11:30 (30 minutes)*

**Session Classification:** Tracker, DAQ and future prospects



Contribution ID: **40**

Type: **not specified**

## **Small Discussion Sessions to be Arranged**

*Saturday 8 October 2022 16:00 (2 hours)*

Contribution ID: **41**

Type: **not specified**

## Dinner info

*Friday 7 October 2022 17:10 (20 minutes)*

Contribution ID: 42

Type: **not specified**

## MEG II LXe calibration and resolution

*Friday 7 October 2022 10:13 (17 minutes)*

**Presenter:** MATSUSHITA, Ayaka

**Session Classification:** Theory and Calorimetry