

QuarkNet Teachers Workshop: Teaching with Data

July 29-30, 2015

Objectives

Participating teachers will:

- Apply classical physics principles to reduce or explain the observations in data investigations.
- Identify and describe ways that data are organized for determining any patterns that may exist in the data.
- Create, organize and interpret data plots; make claims based on evidence and provide explanations; identify data limitations.
- Develop a plan for taking students from their current level of understanding data use to subsequent levels using activities and/or ideas from the workshop.

We will also provide opportunities to engage in critical dialogue among teaching colleagues about what they learn in the workshop.

Wednesday July 29

- 09:00 Coffee and Opening Chat
- 09:15 Introduction/Objectives/Overview/[Data Portfolio](#)
- 09:30 to 10:00 CMS Presentation – **Richard Cavanaugh**
- 10:30 Break
- 10:45 Level 1 Data Portfolio Activities:
- [Rolling with Rutherford](#)
 - [Quark Workbench](#)
- 11:45 Reflection on Activities
- 12:00 Lunch
- 13:00 Level 1 Classroom Activities (each group chooses one)
- [Top Quark](#)
 - [Z Mass](#)
- 14:00 [CMS Data Express](#) (Level 2)
- 15:15 Break
- 15:30 Reflections and discussion
- 16:00 End of workshop day; [Fermilab Colloquium](#) in 1 West
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Thursday July 30

- 09:00 Coffee/Recap of Yesterday/Plan for Today
- 09:30 Visit to ROC – **booked from 10 to 11**
- 10:00 [CMS Masterclass](#) Measurement (Level 2)
- 11:30 Discussion and reflection
- 12:00 Lunch
- 13:00 [CMS e-Lab](#) exploration
- 14:00 Reflection and discussion
- 14:15 Break
- 14:30 Implementation plans
- 15:15 Reports and discussion
- 16:00 Evaluation and close

Friday, July 31

09:00 Coffee/Recap of Yesterday/Plan for Today

09:15ish World Premier of Quarknet 2015 Video

09:30 Chalk Talk – **Tim Meyer**

10:15 Student Presentation I: VIPRAM, Pulsar II B

Lauren Craig (Ted Lui)

11:00 Student Presentation II: Extensions to the LArIAT FPGA Trigger

James Zhu (Will Flanagan)

12:00 Lunch

13:00 Student Presentation III: MKIDs, ARCONS-Spectrum Analysis

Tim Burchfield, George Dozier, Natalie Forsberg (Chris Stoughton)

13:45 Student Presentation IV: QuarkNet Radio Telescope

Saniya Qadir, Jake Johanik, Maciej Mieczko (Chris Stoughton)

14:30 Tour of Radio Telescope Facilities

15:00 Predicting the Future: now what do we do?

15:45 Discussion and Evaluation

16:00 Close