

## QuarkNet Oregon 2017

The Center for High-Energy Physics at the University of Oregon (UOCHEP) hosted the 2017 QuarkNet workshop June 26-27 on the UO campus. This was our 16<sup>th</sup> summer workshop. A printed version of the workshop web page is given on the next page and the URL (including live links) is here:

[http://pages.uoregon.edu/rayfrey/QuarkNet/2017/QuarkNet\\_2017.html](http://pages.uoregon.edu/rayfrey/QuarkNet/2017/QuarkNet_2017.html)

The focus for the workshop this year was on scientific outreach activities. Given the Great 2017 Oregon Eclipse, this seemed appropriate. We also had faculty updates on current research, including gravitational waves and LIGO and Atlas at the LHC. The full list of participants is given in the web page. The UOCHEP faculty participation was Ray Frey (lead mentor and co-PI), Jim Brau (mentor and co-PI), Tim Cohen, Spencer Chang, Scott Fisher, Bryan Rebar, Robert Schofield, and Eric Torrence. The faculty talks were very well received and, following usual practice, the presentation files are linked on the web page above, where they are available to teachers. A special guest this year was QuarkNet observer Dave Trapp. Six high school teachers joined us this year. All of the teachers are from public schools within about 100 miles of Eugene. Funds from the UO College of Arts and Sciences, the UO Center for High Energy Physics, and the UO STEM-CORE program were used to cover local expenses (catering, parking, dorm rooms, misc equipment). Some comments on the main themes of the workshop:

**Education and outreach.** Jim Brau gave one of his outstanding public talks on the 2017 Oregon Eclipse. Our workshop preceded the eclipse, so included some of the outreach plans he was involved with, including a presentation and booth at the Oregon State Fair in Salem on the morning of the eclipse, as well as several public talks across the state. Bryan Rebar, co-Director of an organization at UO called STEM-CORE, talked about how this program encourages and promotes research carried out by K-12 teachers, much of it supported by external funding. Scott Fisher, now the Director of UO's Pine Mountain Observatory, talked about the scientific, education, and public outreach activities centered at the observatory. Finally, we had our popular teacher-led segment on "cool projects" from last year and plans for the coming year. This gives the participants a chance to benefit from each other's experiences and creativity.

**Research updates.** Ray Frey gave a talk relating what has been learned so far from the binary black-hole events discovered with gravitational-wave observations by LIGO. Spencer Chang gave a talk about statistics in social sciences. Robert Schofield gave a tour of his ant lab while explaining the physics and culture of leaf-cutter ant colonies. Eric Torrence and Tim Cohen each gave talks about LHC science that were targeted to accessible topics, i.e. what motivates the LHC upgrades? and easy to grasp keys to understanding LHC science.



## 2017 QuarkNet Workshop, 412 Willamette Hall, University of Oregon

June 26		June 27	
		08:30	Gather, coffee, fruit, pastries
		09:00	Participants: My Projects I 2016-17, 2017-18
		10:30	Jim Brau: The Great Oregon Eclipse
12:00-1	Coffee, fruit, cookies, 412 Willamette Hall	12:00	Lunch (on your own)
1:00	Intros, etc		
1:15	Ray Frey: LIGO and Gravitational Waves – update, implications, and prospects	1:30	Participants: My Projects II 2016-17, 2017-18
2:30	Bryan Rebar: UO STEM-CORE and teacher research resources	2:00	Scott Fisher: Pine Mt Observatory
3:00	Spencer Chang: Statistics and Psychology in Science	3:00	Eric Torrence: Why the LHC upgrades?
4:00	Robert Schofield: Ant Lab tour and/or LIGO	4:00	Tim Cohen: LHC Science demystified

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### UO Faculty participants:

Jim Brau, Spencer Chang, Tim Cohen, Ray Frey, Bryan Rebar, Robert Schofield, Eric Torrence