

QuarkNet Center @ Colorado State University

2024 Annual Report

Faculty mentors: Dr. Bob Wilson, Physics Professor, Department of Physics, Colorado State University

Lead teachers: Cherie Bornhorst, Little Shop of Physics Teacher in Residence; Adam Pearlstein, Little Shop of Physics Assistant Director; and Zach Armstrong, Science Teacher at Greeley West High School

Masterclass@CSU

On Sunday, March 10, 2024 CSU Quarknet Center held our annual Masterclass event, in the Little Shop of Physics space at Colorado State University. Three of the high school teachers involved in our Quarknet center brought a total of 30 students for a day of learning! Quarknet Staff Member, Shane Wood, was also in attendance for the event! The day included a talk by Professor Bob Wilson from Colorado State University Physics Department, lots of time for students to interact with QN Data Portfolio activities, and analyze data. Two Little Shop of Physics interns donated their time and were around during the day to help, and to answer student questions. We also held a mini-session where we taught students how to use a drill press and how to solder. They built two Physics demonstrations that they got to take home as souvenirs. The day came to an end with a videoconference with 2 other Masterclass sites. Overall, it was a huge success! In an end-of-year survey, many students rated their experience with the Masterclass as the highlight of their school year.



Quarknet@CSU Workshop:

The Colorado State Quarknet Center hit the road for a 2-day trip to Lead, SD to visit the Sanford Underground Research Lab and present at the annual Neutrino Day festival! We got to go on an all-day tour of the underground at SURF! We saw the future home of the DUNE Experiment, the LUX experiment, and ate lunch with researchers in the former Ray Davis cavern. On Saturday, we shared science alongside Little Shop of Physics at the Neutrino Day event. LSOP was this year's featured presenter, and we saw over 2000 people! During our trip, we also made time for our traditional Share-a-thon session, where we each bring our newest/best/brightest ideas to share. Lots of great ideas for labs and activities, book reading recommendations, worthwhile professional development opportunities, and tech resources were shared!

Then, later in the summer we had a 2-day workshop where Dan and Ken Cecire traveled to CSU to help us build sets of cosmic watches! Day 1 was all about assembly, and on Day 2 we finished assembling, then did an altitude study by driving up the mountains. We also attached 2 cosmic watches to a drone. Unfortunately we don't have the data from the drone experiment, as it crashed quite violently. But we are excited about trying again in the future to collect that data. Most interestingly, as of late, with the big geomagnetic storms we've been experiencing - our teachers have noticed an increase in the flux on their cosmic watches during periods of high solar activity!



Participants in the summer workshop included:

- Shane Wood, Quarknet
- Cherie Bornhorst, Colorado State University
- Adam Pearlstein, Little Shop of Physics
- Zach Armstrong, Greeley West High School
- Taylor Plantt, McAuliffe STEM Academy
- Matt Leach, Douglas County High School
- Mark McConnell, Mountain Vista High School

The majority of teachers at our center also serve as board members of the CO/WY AAPT section, so we are looking for ways to share QN resources, and recruit more QN teachers, at our upcoming section meeting in the Spring..