

2024 SMU Physics Department QuarkNet Program

The SMU Physics Department sponsored its 25th annual QuarkNet Workshop on the SMU campus in Dallas, Texas. This 3-day workshop was held 16-18 July 2024. This year's program included 20 teachers; most participants were from the greater DFW metroplex, and we also had 2 teachers from New Mexico.

The general workshop format was talks in the morning and "lab" in the afternoon. We had presentations from SMU faculty members on cosmology (Profs. Joel Meyers & Robert Kehoe), particle physics (Prof. Saptaparna Bhattacharya), and the "Best Practice for Science Fairs" (Prof. Simon Dalley). Some of the teachers also presented interesting demonstrations for use in the classroom.

For the afternoon project, we made cloud chambers. We used a dark metal cookie sheet for the base (to conduct the cold from the dry ice) with a clear plastic container to contain the alcohol vapor. We were able to observe cosmic rays, and we also had some radioactive alpha sources which generated tracks.

We also took a field trip to UT Southwestern to hear presentations with their STARS (Science Teacher Access to Resources at Southwestern) program. In the morning we heard from Dr. Genevieve Kanopka (UTSW Department of Neuroscience) on "What Makes Us Human? Exploring Brain Cells One at a Time." Dr. Kanopka's research examines transcriptional networks, evolution of human cognition, and cognitive genomics. She also oversees her lab's participation in the international Human Cell Atlas project, which aims to "map gene expression in every cell of the human body." In the afternoon, we had a lecture from Dr. Luke Rice (UTSW Biophysics), who presented his work on microtubules. His research spans both physics and biology. The microtubules are responsible for chromosome segregation, have vital roles in organizing the interior of eukaryotic cells, and that are the direct targets of anti-cancer therapeutics. After the lecture, we had a tour of the fascinating biophysics Cryo-Electron Microscopy Facility (CEMF) facilities led by Dr. Daniel Stoddard.

We had a very energetic group of teachers this year, and we look forward to continued interaction with them in the future. SMU hosted the regional APS meeting on 17-19 October 2024, and some QuarkNet teachers joined us for this event. We are currently making plans for our 2025 Workshop.



2024 SMU Physics Department QuarkNet participants
visiting UT Southwestern Medical Center.



2024 SMU Physics Department QuarkNet participants
at the SMU Physics Department