

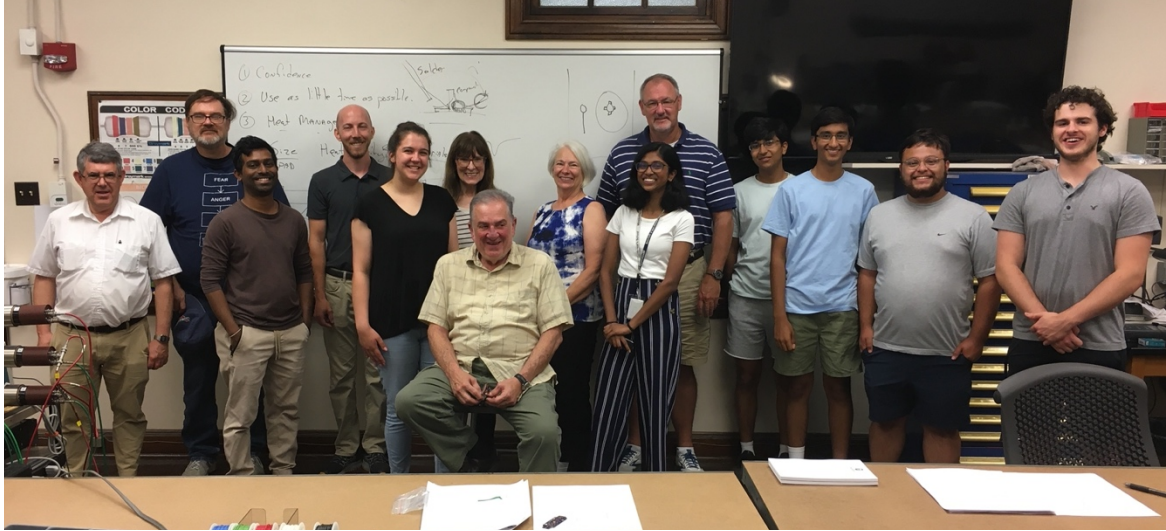
## Mississippi QuarkNet Report 2022

The University of Mississippi QuarkNet program for 2022 included six teachers from the northern Mississippi region. The group includes both male and female teachers with a variety of experience (including one who is starting her first year this fall) and background. Three of the teachers have attended regularly in the past and three are new or have not attended recently. This is also the first year Assistant Professor Jake Bennett has taken the lead for UM QuarkNet, under the guidance of Professor Lucien Cremaldi.

The 2022 program centered primarily on two events. The first of these (<https://quarknet.org/content/qnfpcp2022>) was held on campus following the 20<sup>th</sup> Conference on Flavor Physics and CP Violation. On the afternoon of Friday, May 27, a public masterclass was held, at which several QuarkNet experts (Ken Cecire, Shane Wood, Jose Alvarez, Marla Glover, Maria Niland, and Jake Bennett) presented introductory details using the particle cards activity and gave a short introduction to the standard model, followed by masterclass “morsels” from Minerva and Belle II. In total, about 30 people attended, including three Mississippi QuarkNet teachers, who were invited to stay overnight and join a QuarkNet workshop on Saturday. The workshop focused on particle lifetimes, which was something presented by Mississippi researchers at FPCP. We performed two lifetime activities, which the teachers were encouraged to consider using in their classrooms, and then reviewed some of the posters presented by UM students based on recent work.



The second QuarkNet event was held on July 9 and focused on particle detection. Five QuarkNet teachers attended and several high school students who were doing particle physics research on campus as part of the ARISE summer program were also invited to join. In addition to a description of historical and modern particle detection techniques by Bennett, attendees were able to build their own simple particle detectors. The components for the detectors were purchased in advance and attendees were instructed on how to solder them into a working device by UM instructor Daniel Kleinert and assisted by other UM researchers.



A third event is being planned for November 5, following the meeting of the Southeastern Section of the American Physical Society, which will also take place on the campus of the University of Mississippi. QuarkNet teachers have been invited to join for the final sessions of the conference, which will feature discussions of physics education topics, and stay for a public masterclass event. The masterclass will differ from that earlier in the year by being more specific to Belle II and allow attendees more time to experiment with the software.