

Rutgers 2021 Annual QuarkNet Program Report

This summer the Rutgers QuarkNet Center held two workshops on quantum computing for high school teachers, a two-week introductory workshop quantum computing attended by twenty high school teachers and and a one-week workshop attended by twelve high school teachers. The emphasis of the introductory workshop was on introducing the basic concepts of quantum mechanics and quantum computing and on developing methods for introducing this material into the high school classroom. The teachers gained experience using IBM's Qiskit framework to program actual quantum computers. The advanced workshop covered topics such as Shor's and Grover's algorithms and the relationship of quantum information and black holes. Each workshop consisted of a daily four-hour session each. Due to the covid pandemic, the workshops were necessarily run remotely. We are planning a follow-up in-person workshop to be held this spring. Also, because of the covid pandemic, as last year, we again did not hold our highly acclaimed two-week Rutgers QuarkNet program for high school students that we have conducted for more than twenty years. We are looking forward to resuming this program in the coming summer.

Mentor: Steve Schnetzer

Rutgers University is one of the oldest QuarkNet centers having been established in 2000 the second year of the NSF funded QuarkNet program. Our center has trained over twenty high school physics teachers from throughout New Jersey in leading edge particle physics and have involved them in the construction, operation and classroom use of cosmic ray detector kits. For over ten years, we have run a highly successful two-week summer program for high school teachers and students.