Department of Physics and Astronomy

Naureen Akhter

Mentor: Reshmi Mukherjee

Observation of the Active Galaxy 1ES1218+304 with STACEE

Active galaxies are extremely luminous objects, thought to be powered by the gravitational potential contained in supermassive black holes. Studying these objects in high energy gamma rays allows us to learn about particle acceleration in extreme astrophysical environments. My work, this past summer, involved observing one particular active galactic nuclei (AGN) 1ES 1218+304, in high energy gamma rays using STACEE (Solar Tower Atmospheric Cherenkov Effect Experiment), located in Albuquerque, New Mexico. STACEE employs the naturally occurring phenomenon of Cherenkov radiation caused by interactions between gamma rays with the upper atmosphere to study high energy astrophysical sources. Cherenkov radiation is the optical analogue of a sonic boom: particles that are produced as a result of the aforementioned interactions move faster than the speed of light in air to produce a flash of short duration blue light. STACEE is composed of a field of mirrors that reflect this light to secondary mirrors, and subsequently to a camera of photomultiplier tubes that convert this light into electrical signals. These signals are analyzed by STACEE scientists to learn about the astrophysical sources. I analyzed the data taken for the AGN 1ES 1218+304 during observations in the spring of 2006. Results from my analysis will be presented in my talk.