

Siemens Competition

Math : Science : Technology

Regional Finalist

Names: Aaron Huang and Pranav Sekhar

High School: Lynbrook High School, San Jose, CA and Saint Francis High School, Mountain View, CA

Mentor: Mr. Hassen Yesuf

Project Title: *The Detection of Extended Galactic Wind Emission in Distant Galaxies* (Astrophysics)

Galactic winds are observed to be ubiquitous at intermediate redshift, but their physical extent is yet unknown. In this work we used a sample of 2000 galaxies from the DEEP3 redshift survey to study the average physical size of the winds at this epoch using the near UV Mg II emission line. By constructing a high signal-to-noise co-added spectra, we were able to detect novel excess Mg II emission from wind out to 10 kiloparsecs in radius that cannot be accounted for by stellar emission in the galaxy. We also find that low mass galaxies and edge-on galaxies show more enhanced wind signatures.