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It's a new day with Spectrum

AITE Students Nina Bellusci and Peter Pawelski, Teacher Vin Urbanowski Present Research at World-Class Science Conference

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By Academy of Information Technology & Engineering (AITE)

Stamford, CT - Earlier this year two Academy of Information Technology & Engineering (AITE) students and their teacher had the experience of a lifetime. AITE Seniors Nina Bellusci and Peter Pawelski, along with AITE Math Teacher Vin Urbanowski, traveled to Grapevine, Texas, to present the results of a year-long research project at the winter meeting of the American Astronomical Society (AAS).

As part of the NASA/IPAC Teacher Archive Research Program (NITARP), under the mentorship of astronomer Dr. Varoujan Gorjian of Caltech, the AITE team together with

contributed photo

representatives from high schools in Tennessee, Massachusetts and Virginia used mathematical tools combined with scientific knowledge to identify Active Galactic Nuclei (AGN) from infrared data collected by the Spitzer Space Telescope.

"The professional astronomers mentoring this program were unbelievably generous with their time and patience," said Mr. Urbanowski. "They gave us a seat at the table, both literally and figuratively, as the program kicked off with star talk and supper at the home of Dr. Gorjian and concluded a year later with students, teachers and astronomers once again sharing insights and a meal around a long table at the AAS conference."

The program began last summer with a week of education and training at Caltech in Pasadena, Calif. It continued throughout the following months with online collaboration and weekly videoconferencing to coordinate the research and produce the poster for the presentation. The program is fully funded by the NASA Astrophysics Data Program, resulting in zero cost to the district or student families, including tuition, transportation and living expenses during both Caltech work sessions and the AAS conference.

"Everybody thinks astronomers spend all their time looking through telescopes," said Bellusci. "But what really happens is that they look at measurements of light at various wavelengths for lots and lots of stars, and do math to find out if the theories are right. Our sorting was all about color and magnitude."

"Once we got as far as we could with math alone," said Pawelski, "then we actually looked at images to see which of our picks were point-like, which means they were stars; or in a star-forming cloud, which means they baby stars; or a little fuzzy and all by themselves, which means there's a good chance we'd found a galaxy."

"I'm proud of these kids for learning so much about astronomy," said Urbanowski, "and even prouder still of the lesson they learned about the way science works."

"That's right," said Bellusci. "The process isn't about getting exact answers immediately and having a definitive solution. It's about making mistakes and learning from them, and adapting different methods to figure out what works and produces a reasonable conclusion. The whole point is to make mistakes and use them to improve our current knowledge."

The ultimate product of all that work, a poster titled, "Searching for Short-Term Variable Active Galactic

It's a new day with Spectrum



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Nuclei: A Vital Step Toward Using AGN as Standard Candles," lists Bellusci, Pawelski and Urbanowski among its authors.

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