Galaxies far, far away

Local teacher, students to work with NASA

By Kaley Toy

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Russell Kohrs, a teacher at Massanutten Governors School in Mount Jackson, looks through this homemade loop antenna designed for use in solar observation. Kohrs and his students are working on a project with NASA's Jet Propulsion Laboratory. Rich Cooley/Daily

MOUNT JACKSON – Russell Kohrs, environmental science teacher at Massanutten Regional Governor's School for Integrated Environmental Science and Technology, along with two of his students, will be working with NASA's Jet Propulsion Laboratory (JPL) over the next year.

Kohrs attended a conference recently in Kissimmee, Florida, of the American Astronomical Society for work they will be completing over the next year. More than 50 teachers, students and an astronomy educator from the NASA/IPAC Teacher Archive Research Program (NITARP) participated.

NITARP gives teachers a chance to work with a research astronomer for a year-long project to be presented at the following year's conference.

Kohrs will be working with Dr. Varoujan Gorjian, an astronomical researcher for the Infrared Processing and Analysis Center (IPAC), based at the California Institute of Technology.

Their work will be on discovering active galactic nuclei (AGN), which are "galaxies in their earliest form," Kohrs said.

Kohrs will also be asking two of his students to work with him on the year-long project as part of their senior research project at the school.

"We will be exploring AGNs in hopes of identifying a population of these very distant objects that can be used as

'standard candles' or distance markers. Active galactic nuclei, historically known as "quasars," are some of the most distant galaxies in the universe and may represent one of the early stages of galaxy formation after the Big Bang," he said about what their project entails.

These AGNs can reside up to 13 billion light years from Earth. Distances in the billions of light years are hard to measure so astronomers use other objects for calculating accurate distances for with known physical equations.

In order to calculate these precise distances, program participants will study infrared light from black holes, which are present in the center of AGNs, and measure their distances away from Earth.

"Using the visible infrared light spectra being produced by dust being heated by radiation being created near the event horizon of the supermassive black holes that lie at the center of these objects, we hope to be able to calculate accurate distances to them," he explained.

In order to work on these calculations, Kohrs and his students will be traveling to the California Institute of Technology in Pasadena, California, in June for four days to use astronomical equipment there to perform in-person research studies. They will also be using archival data, which is available to the public.

At the end of the project, group members will present their findings at next year's conference in Dallas, Texas.

Once the project is completed, Kohrs will create an educational poster to use in his class, relating his astronomical work to his environmental class.

Also in Gorjian's team are three other teachers, which include Thomas Rutherford, from Kingsport, Tennessee; Kelly Klits, from Lexington, Massachusetts; and Vincent Urbanowski, from Stamford, Connecticut.

This is Kohrs' first year with Massanutten Regional Governor's School, but this is his 13th year teaching. He previously taught at Broadway High School.

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