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ESPACE

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Student observation of black hole with space telescope Reported at American Astronomical Society

Antioch, March 19, 2006:

Students at Deer Valley High School are about to undertake a second trip to the edge of the universe. For the second time in two years, students at Deer Valley High School's ESPACE Academy will use NASA's Spitzer Infrared Space Telescope to take photos of a distant quasar. Last year, high school student Brielle Hinckley and three teachers used the telescope to observe a distant black hole and characterize the radiation emitted by the region surrounding it. The telescope orbits the sun and is millions of miles away from the earth, and operated by remote control like the Hubble Space Telescope. Results of the first observations were presented as a poster session at the annual Winter meeting of the American Astronomical Society in Washington D.C. this last January.

Using a special opportunity provided by the Spitzer Science Center at Cal Tech, and the National Optical Astronomy Observatory (NOAO) in Tucson, Arizona, high school senior Brielle Hinckley spent many days learning to operate special software for extracting brightness measurements from photographs of the blazar known as 4C 29.45. The target was selected by a special list of blazars maintained by a project at Sonoma State University. Only a handful of schools and students directly participate in the program.

Four projects were approved for the current cycle of observations. A blazar is a titanic black hole in a distant galaxy that is grinding up the galaxy around it, destroying it in the process. The material falling into the black hole emits characteristic radiation, which Hinckley observed both with the space telescope and a remote-controlled observatory in New Mexico. Hinckley was assisted by her teacher, Jeff Adkins; Dr. Mark Lacy of the Spitzer Science Center; Linda Stefaniak, a teacher from Allentown High School in New Jersey; and Dr. Steve Rapp, a teacher from Linwood Holton Governor's School in Virginia. Hinckley did the majority of the data reduction, collecting dozens of images from a ground based telescope and doing more than half of the analysis of the space telescope data. "It was hard work," she said, "I have never done anything like this before, and it was really intense."

Now four new DVHS students will get the opportunity. "The first paper was successful, so we were invited to submit a proposal by a new target," according to Adkins. Four new students have been selected to collect ground-based data and learn how to analyze the images. Thomas Travagli, Alekzandir Morton, John Michael Santiago, and Manutej Mulaveesala have just learned that their new target, known as S5 0716+714, will be observed by the Spitzer Space Telescope on April 8. The students have applied for and received time on a remote-controlled ground based telescope in New Mexico to take their own images of the target. The students are members of the ESPACE (Earth, Space and Astronomy Center for Education) program at Deer Valley High School, which is funded in part by a Specialized Secondary Grant from the California Department of Education.

For more information, go to www.ESPACEacademy.com and click on the picture of the Spitzer Space Telescope.