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Physics Student Reaches for the Stars

April 10, 2015

BLOOMINGTON, Ill.— From his perch behind the telescope in the Mark Evans Observatory, physics major Kyle Connour '15 (Bloomington, Illinois) has spent a considerable portion of the past three years observing asteroids and other heavenly bodies. That experience has led to a scientific publication and multiple offers from graduate school as Connour prepares for a career as a professional astronomer.

His initiative on projects involving the University's Mark Evans Observatory has resulted in a number of kudos, including a first for the observatory. Connour and another student, chemistry and physics double major Tyler Wright '15 (Peoria Heights, Illinois), made photometric observations of main-belt asteroid 584 Semiramis, a minor planet orbiting the sun. These observations were recently published in *Minor Planet Bulletin*, a peer-reviewed journal funded by NASA and the National Science Foundation. It's the first such publication involving research at Illinois Wesleyan's observatory. Connour was also one of the students making precise observations that resulted in the Mark Evans Observatory's designation as an official observing site, a designation shared with such renowned observatories as Cerro Tololo in Chile and Mauna Kea in Hawaii.



Kyle Connour '15 aligns the telescope in the Mark Evans Observatory.

Connour believes his extensive experience observing asteroids provided a considerable edge as he applied to graduate schools. As he spoke with faculty and other prospective students on his visits to graduate schools, Connour discovered that the work he and his classmates had done on asteroids was uncommon. During one graduate school visit, the 23 student candidates were invited to speak about their interests and the research they had done.

"Immediately after all the prospective students gave their talks, three or four professors working on solar system objects flocked to me to tell me about their projects and to see if I was interested in working with them, since only two of the prospective students were interested in the solar system," Connour recalled. "Another three or four [faculty] were also interested in talking to me, but they chose to wait until the crowd died down."

Although it made him a popular graduate school candidate, the research was not smooth sailing. Aligning the telescope exactly was the first major test. "For the longest time we were off by just a fraction," said Connour. Synching the computer software with the telescope's electronic camera proved to be another vexing challenge. After eventually solving those trials, Connour had to sift through large data sets and reams of photographs to determine if the software was delivering the desired numbers.



Discovering a love for physics in a liberal arts environment

"It was an extensive process," said Connour. "I'd run into a problem and be really frustrated. It's really rewarding now to look back and see how I worked through so many problems and got a great result in the end."

He appreciates the publication in *Minor Planet Bulletin*, but said he's happiest to have flattened the learning curve, at least a little, for the next generation of astronomy students. In the scientific tradition, Connour took copious notes of his failures as well as his successes. Younger students will know the pitfalls they're likely to encounter, he said, as they add to the observatory's data set. "The real reward for me was seeing all the great observations that can be taken at the Mark Evans Observatory now that all the slogging through this groundwork has been laid," he said.

His liberal arts education at Illinois Wesleyan has laid the groundwork for his success as well. “I wanted to be a physics major when I came to Illinois Wesleyan, but I didn’t have a strong inclination at that time what I really wanted to do with it,” he recalled. “I knew the overall academic experience I would get here would be beneficial no matter which I direction I decided to take, and that has turned out to be the case.”

That direction will always be skyward. Connour’s dream job would be to work for NASA or another organization on missions similar to the European Space Agency’s *Rosetta* probe to study comet 67P/Churyumov–Gerasimenko or NASA’s *New Horizons*, scheduled for the first flyby of Pluto this summer. This fall he’ll take an important step as he enters the Ph.D. program in planetary science at the University of Colorado Boulder.