

RESEARCH

Physicists make the most of CAREER

Databases, programs founded thanks to \$550K grants

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Daily Nebraskan

It's not often a professor receives a Faculty Early Career Development (CAREER) grant, which allows recipients to not only work on his or her own projects and research, but to also share his or her gifts with others in an educational manner.

It's even less likely that three professors in the same department receive CAREER grants in the same year.

The Physics and Astronomy Department at the University of

Nebraska-Lincoln, however, has seen three of its faculty members receive the grants, each worth \$550,000.

Christian Binek is a solid-state physicist who more specifically works in the field of magnetic hetero structures.

Binek is bringing together different types of magnets under ultra-high vacuum conditions to make thin magnetic films that can be used as hard drives in computers for logical and memory applications.

One form of these structuring is called spintronics, which means the scientist manipulates the spin of electrons with magnets on an atomic level to control electronic current flow.

"By controlling the direction of spin, one can control the flow of current," Binek said. "This can create new devices where the spin of the electron is used in a specific manner, like logic or memory."

In creating these films, Binek

also aims to create a computer database that will feature a kind of artificially intelligent human-like avatar designed to answer specific questions about the field of physics and about the department at UNL.

Fellow professor and CAREER grant recipient Aaron Dominguez is researching elementary particle physics and will be doing some work at the CERN lab in Geneva, Switzerland as well.

Through his grant, Dominguez is starting a pilot tutoring program called BEST, or Bilingual English Spanish Tutors.

The program will give elementary school age English language learners extra help after school by pairing the children with successful bilingual high school students, Dominguez said.

Dominguez, who grew up in New Mexico and experienced the dropout rate of 50 percent of other Latinos from his high school, noticed that as he

progressed in education, there were fewer and fewer Chicanos, especially in his field.

Dominguez said he hasn't met one yet, when the percentage of Chicanos in his field should be at about 12 percent.

Dominguez started an after school program for young children in his neighborhood - mostly English language learners - with the help of recruited high school students, tutored the children. Dominguez's program was a way to give the children additional support and find them positive role models in the high school students.

It seemed to be a recipe that worked, he said, and this year Dominguez is starting a similar program to catch the young children before they start failing school, before school becomes negative.

"My long-term goal is to change the number of Chicanos getting higher degrees," he said.