Alvin Garcia Awarded Position in the DOE’s Office of Science Graduate Student Research Program

Garcia, a fifth-year Physics & Astronomy graduate student, is working on clean energy research at the DIII-D nuclear fusion experiment in San Diego.

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UCI Physical Sciences Communications



Alvin Garcia, working to introduce the world to its cleanest green energy source to date: nuclear fusion. Seen here smiling in his natural physics graduate student

habitat: a windowless office.

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Nuclear Fusion. It’s the secret behind Tony Stark’s seemingly miraculous healing abilities and the driver of intergalactic space travel in “Star Trek.” Now, in Professor William “Bill” Heidbrink’s lab in the UCI Department of Physics & Astronomy, graduate students like Alvin Garcia might be making your favorite sci-fi character’s preferred energy source a reality.

Each year the Department of Energy’s (DOE’s) Office of Science awards 65 graduate students positions in the prestigious Office of Science Graduate Student Research (SCGSR) program. Students chosen for this program receive funding to work on research projects deemed important on both the national and international level by the Office of Science. This year, Garcia is one of those students.

Garcia does experimental research in plasma physics — specifically, in nuclear fusion. His research involves the DIII-D tokamak, a magnetic fusion experiment funded by the DOE. Physicists working on the DIII-D experiment are attempting to optimize energy production through nuclear fusion using a powerful magnetic field which controls and shapes plasma in the reactor. Garcia’s goal for his SCGSR project is to use machine learning to classify plasma waves found in the DIII-D experiment.

The methods and models devised by Garcia could then be used for real time plasma control in the experiment leading to more stable conditions in which nuclear fusion can occur. The fellowship will fund Garcia to do this research at the Princeton Plasma Physics Laboratory, further enhancing the national impact of research from the UCI School of Physical Sciences.

Thanks to physicists like Garcia, Captain Kirk’s Starship Enterprise might be around the corner before we know it.

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