

Personal Statement

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Since an early age, I have made a conscious effort to make an impact on, and learn from, as many people as I can. I highly value education, thus the majority of my endeavors have been contributions to research, education, and innovations in science through teaching. I have employed both one-on-one and group learning techniques to ensure a maximum satisfaction of each pupil, as well as emphasizing the effectiveness of collaborations. I always strive to learn more about the diverse world around me in my life, my studies, and now my career.

As a first year graduate student, my career in astronomy is only beginning, yet I plan for it to be long and fruitful. I have known for certain since I was young that I wanted to devote my life to studying astrophysical phenomena. When a year-long astronomy class was offered at my high school my sophomore year, I jumped at the opportunity to learn more about a subject I had always considered an intellectual playground. Even though my coursework for the year was already loaded down with another science class, honors chemistry, I gladly took on the challenge; I have found that I do my best work and learn the most in more demanding situations. I could not have had a better introduction to astronomy! My teacher was adamant in keeping her class informed about cutting-edge astronomy research. One enrichment discussion in particular sparked something inside of me, and has driven my research interests since. My teacher showed a video of simulated perturbations of interstellar and intergalactic hydrodynamic gaseous bodies. I was immediately transfixed by a deep curiosity and a deep desire to be able to understand the physical processes and apply them to various astronomical phenomena. I knew that I would do everything in my power to direct my efforts towards studying hydrodynamics in astronomy.

I aspire to complete a doctoral degree in astronomy and to become a faculty professor at a research-active university. Completing my PhD is only the beginning. I would also like to continue to broaden my horizons by pursuing a post-doctoral position, preferably in another country so that I may bring this experience back to the United States and apply a breadth of perspective in science as a professor and a mentor of future students. Once I have completed post-doc positions to adequately prepare myself for a full career in astronomy, I will pursue a faculty position at a research-active university, continuing in my efforts to both explain the Universe and lead educational development. The NSF fellowship will be pivotal in my aspirations, as the National Science Foundation, via their Research Experience for Undergraduates program, has already proven to open doors for me. I seek to advance to the forefront of science, and become a major contributor to the scientific community. An NSF fellowship will magnify my aspiring voice above the sea of beginning researchers, helping me to concentrate my endeavors on research and innovations in science.

In high school I was vice-president of the National Honor Society, an organization that facilitates community outreach opportunities for students. I helped organize and lead weekly meetings, where other officers and myself provided a weekly list of suggestions for interesting and enriching community and educational service projects for individual members. As an example of my experience, for two years while vice-president of the National Honor Society, I tutored a young economically disadvantaged African-American male in algebra. This was my first experience in teaching. I was very eager to challenge my horizons when I was presented this opportunity; both academically and socially. Three times a week after band and dance team practice, I spent over an hour at his house to help him master the “mathematical concept of the week.” Some days were more difficult than others, especially when he became discouraged a few times at the occasional poor quiz score. No matter how disheartened he would get, I would always try to remind him of the importance of learning; it is ongoing and

valuable in all walks of life. To demonstrate this, several times I constructed the lesson around his favorite hobby- basketball. Once he saw advantages to algebra - through applications he could “take home” - the subject material became much easier and fun for him.

As an undergraduate at the University of Southern California, I was an active member of the Society of Physics Students, and held the position of “Study Group Coordinator.” I coordinated and ran study sessions for physics students, where I emphasized at the importance of group participation for learning science. Much scientific progress is done through collaborations; my goal in the study sessions was to encourage discussions on the material, to develop collaborative skills.

I have actively participated in over six research projects over the past five years. I completed two Research Experience for Undergraduates projects, one at SRI International, and the other at the Cerro Tololo Inter-American Observatory, both concluding with published results. I also held a Science Undergraduate Laboratory Internship fellow position at the Stanford Linear Accelerator Center. I contributed to active research at Caltech, and will present these results in a paper soon to be published, and a talk and poster at the American Astronomical Society (AAS) meeting. I am also co-presenting results of work performed in my first semester of graduate school at the 2007 AAS meeting. Details may be found in my Previous Research essay.

I have always embraced learning about other cultures; the most effective way to teach someone is to first understand their views on the world. As an astronomer, I think in global terms, and find it crucial to expand my understanding of the only world I know - Earth. I studied French language and culture through high school and all of college. Towards the end of my undergraduate studies, I was given the chance to pursue research in another country. I was elated with the opportunity to represent my country through science! The National Science Foundation flew me and five other American physics students to La Serena, Chile, to partake in active astronomy research, and be ambassadors of U.S. astronomical research and education in a foreign nation. We lived together in a house with two female Chilean students, also in the program, and took weekly Spanish lessons. All eight of us became close friends, and traveled around Chile any free weekend we could spare to explore the country's diverse culture and history. At the end of the program, both the Chilenas invited us to their homes in Santiago and Concepción to share more of their local world with us. At some point in my career I hope to work abroad again, possibly in a post-doctoral position. The field of astronomy is truly world-wide; it provides endless opportunities to expand one's horizons and broaden the horizons of others in turn, both academically and socially.

Upon returning to the US and starting graduate school, I have found myself in a new position of opportunity to make a broader impact on and participate with diverse groups in the sciences. I am a first-year grad student at New Mexico State University, one of only six institutions in the US certified to give PhDs that is classified as both a Carnegie Class I research institution and a minority institution, as defined by the Department of Education. Over 45% of NMSU undergraduates are ethnic minorities, the majority of which are Hispanic. Hence, I am in a unique position to make a significant impact on the education of an underrepresented group. I currently a teaching assistant for a 300-level class of over 60 students, and am charged with grading, tutoring, and teaching occasional lectures. I am helping my students, many of which are first generation college students, to build confidence in their abilities in the sciences so that they too can believe they are capable of achieving great feats. I love science and learning, and my goal is to impart this passion on other students. Science and the love to learn can and should reach beyond cultural boundaries. I continuously strive to breach these boundaries in my career.