

Statement of Teaching

1 Education

Although I have had little formal teaching experience, I have already had quite a bit of experience working with students at the undergraduate and graduate level. Last spring I mentored a group of four undergraduate engineering students in the National Student Solar Spectrograph Competition. It was very interesting to see each student's learning style, and their sense of commitment to the project. I learned about my own teaching style as I struggled to teach them the concepts of basic optics. I have also helped mentor REU students in both the MSU and UH REU programs, and the past few semesters I have been working with a graduate student on her masters thesis. More on her project is discussed in my research statement.

At MSU I have already placed myself on the path to teaching, and if I remain at MSU for the 2014 fall semester I will teach a class for the first time. I believe that a high quality of teaching, especially of astronomy and physics courses for non-majors, is very important for the mental training of the general university population. Problems in astronomy and physics require abstract thinking, visualization, and logic which are highly desirable skills in any field. Simple principals, such as seasons or phases of the moon, can be complicated by a student's preconceptions. Getting students to let go of their preconceptions and think on their own is not an easy task. From working with the astronomy education group at the University of Arizona, I know that general university students learn in many different ways and I am willing to try a variety of techniques to teach astronomical concepts.

I have heard people say that lecturing is the best form of teaching at the physics/astronomy undergraduate major, and graduate level. I do not think that this is the case, and I think many talented people turn away from physics for this reason. I believe that it is important to challenge students and keep standards high, but making the classroom interactive, catering to visual learning styles, and providing real-world applications of physical and astronomical concepts is important. Above all, I believe it is important to be accessible to students at this level.

2 Outreach

Communication of exciting scientific results to the general public is an important part of being a researcher. I have been very active in a wide variety of outreach activities during my undergraduate and graduate career, taking telescopes and the Institute for Astronomy's portable planetarium to school and community groups for stargazing activities. These efforts have continued during my post-doc, through both public and grade-school lectures. I have also been an instructor at the University of Arizona Astronomy Camps for many summers since the end of my undergraduate career, which has given me the opportunity to work with many very talented high school students. At CU I intend to continue to be an advocate for science in the local and international community.

The majority of outreach activities I have participated in through my career have been unfunded, and above and beyond my work duties. Outreach in itself is an incentive for me, but I believe that it is important to fund outreach, both to provide incentive for participating researchers, and to cover the cost of materials and travel. CU already has excellent opportunities for outreach through Fiske Planetarium and Astronomy Day, but many of the current programs appear to focus on the Boulder community. CU is the most eminent research institute in the state of Colorado, and its reach should be statewide. The NASA space grant programs run from MSU have shown me what statewide programs can do for the community, and I would like to contribute to the development of a statewide astronomy outreach program for Colorado.