Personal Statement

I have loved astronomy since I could read a book. But, when I was in high school, I was also enamored with the idea of flying, particularly for the US Navy. When I went to college in the early 2000's, I whole-heartedly pursued that end through Navy ROTC and a degree in chemistry. While I didn't end up as a pilot, I did serve as a US Navy officer for 5 years following college, specializing in nuclear reactor operations. When I left the Navy, I decided I wanted to share my love for science by pursuing a career getting others excited about science – as a middle school science teacher. For 6 years, I told my students all about physics and astronomy, and even created an elective class about space exploration. Getting kids excited about space reminded me of something I had forgotten – just how thrilling it is to learn about space.

So, I left teaching and decided to pursue a career that will let me do just that. 3 years ago, I returned to college to pursue a second bachelor's degree in astronomy and physics. This time through, I am finding that I am much more focused, much more driven, and am pursuing astronomy research with a fervor. For 2 semesters, I worked in the VIRUS instrumentation lab building the largest fiber-fed spectrograph for the HETDEX project. In summer 2016, I attended an REU at Norther Arizona University, where I conducted an astrophysical laboratory project exploring the stability of liquid mixtures in the Titan environment, and how the lakes on might interact with that environment. I presented my work at several undergraduate research symposiums across Texas, and at the Lunar and Planetary Science Conference.

In Jan 2017, I began a research project with Dr. Adam Kraus on determining the allowed orbital parameters for several directly-imaged wide exoplanet systems based on observation. Without a doubt, my work with Dr. Kraus has had a significant impact on my career goals. My earlier research experiences taught me that I love research; this project taught me that I *really* love exoplanet research. This project has significantly challenged me. I have studied in depth the physics of Keplerian orbits, developed two statistical modeling tools for my analysis – a custom-built Metropolis-Hastings MCMC for high precision astrometry and a rejection sampling algorithm for fitting orbital parameters (modeled after Orbits for the Impatient by Blunt et. al. 2017), and presented my work as numerous astronomy conferences and undergraduate research seminars. I have traveled to the W. M. Keck Observatory to collect data for my analysis, where I decided observational astronomy was the career for me. I am currently writing up my results and intend to submit to a journal in early 2018. Additionally, I am working with Sarah Blunt at Cal Tech and collaborators to create an open-source orbit-fitting python package which will be made available to astronomy community. I have attended three AAS meetings, two of which I presented a poster of my research. I am very proud of the work I have achieved so far in astronomy research, and I am ready to continue to push my skills, experiences, and involvement.

Outside of the classroom and computer lab, I am involved in several activities both on and off campus. I am an active member of the Astronomy Student's Association, which conducts weekly meetings on astronomy topics, as well as outreach to the local on- and off-campus community. I serve as one of the Department of Astronomy Undergraduate Representatives, a liaison between the faculty and the undergraduate student population. I create graphics for the Astronomy On Tap ATX show each month and set up the venue. I am an active member of the Student Veteran's Association, and am currently serving as a peer mentor, helping new veteran students transition to life as a college student. Several years ago, I turned a photography hobby into a small side business, providing a wide range of photography services around Austin. I also serve as a deacon in my church, and am big fan of backpacking and America's national parks.

Following my time at UT, I plan to attend graduate school in astronomy, with a focus on exoplanets. I very much enjoy working with directly imaged exoplanets, but I am looking to explore other areas of the field as well. Following graduate school I am less clear, but I know I want a path that lets me continue to do exoplanet science.