

I am a Principal Research Scientist (PRS) appointed in both the Aeronautics and Astronautics Department and the MIT Kavli Institute, and co-director of the Space Systems Laboratory (SSL) along with Prof. Richard Linares. My research group focuses broadly in the areas of system engineering, integrated modeling, uncertainty management, and instrument design. I work at the intersections of academia and industry and engineering and science. Our work transitions cutting-edge systems engineering and pioneering analysis methodologies into use on scientific hardware and instrumentation, both in space and on the ground. Focus areas of the group include:

- model-based systems engineering (MBSE)
- control-structures interactions
- the application of Bayesian uncertainty techniques to spacecraft and instrument design.

I have delivered two instruments for space flight, REXIS (REgolith X-Ray Imaging Spectrometer) on the OSIRIS-REx mission and TESS (Transiting Exoplanet Survey Satellite). There is no better education than hands-on experience and I am always seeking out opportunities to work on hardware with my students.

As a PRS I am a member of the research faculty and advise masters students and participate on the committees of PhD students. My group consists of graduate students at all levels. I try to keep my group to around 5 students and am open to co-advising with other faculty members. My group collaborates frequently with Prof Linares's group, the Space Propulsion Laboratory, the Engineering Systems Laboratory and MIT Lincoln Laboratory. My research group meets weekly on Mondays to go over priorities for the week and discuss obstacles. The group meeting provides an opportunity for students to learn about each other's research and to problem solve together. I also schedule a weekly 30-minute one-on-one slot with each student to go deeper into their particular research. These one-on-one meetings are opportunities for career guidance and mentoring as well. There is an SSL seminar that my students are expected to attend weekly and present their research once each semester. Each student is assigned a job within SSL to keep the lab and facilities running smoothly. My group often includes a number of UROPs that are supervised by the graduate students. The UROPs join research or project meetings as appropriate for the work that they are doing.

The Masterson Research Group is inclusive and collaborative. We welcome students of all backgrounds and identities and work together to provide a supportive and welcoming



environment. I have family at home and I work hard to provide my students what they need while protecting my family time. You will get to know my kids through stories and the occasional visit. I expect all my students to work hard and focus while they are on campus, but to take the time they need to lead balanced and full lives. Meetings are designed to be productive, focused work time during which information is exchanged and decisions are made. I expect students to come to meetings prepared with progress and information to share, visually as well as verbally, and I will give my undivided attention. New students are welcome to the group by the existing students and are often “buddied up” in research/project meetings to get them started. Each student thesis should result in a publishable paper. We submit to both journals and conferences. I am supportive of students attending conferences when funding allows it.