The recent detection of gravitational waves from binary black hole mergers marks the beginning of the field of gravitational wave astronomy. New and more sensitive techniques will be required to continue expanding our understanding of the universe through gravitational waves. Current research and development efforts range from surpassing the standard quantum limit using squeezed states, to improving thermal noise at the frontiers of the material science of optical coatings, to the conceptual design of new interferometer topologies. These noise reduction efforts will increase the sensitivity of the detectors, allowing the measurement of smaller effects and extending our reach to cosmological scales.

Bio: Dr. Sanders research areas include: Third-generation gravitational wave detector technology, gravitational waves, and multimessenger astronomy with Advanced LIGO.