



## Dr. Adam Maxwell

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### *Biography:*

Dr. Adam Maxwell received a B.S. degree in electrical engineering in 2006 from the University of Washington. He received his M.S. degree in electrical engineering in 2007 and Ph.D. degree in biomedical engineering in 2012 at the University of Michigan. He is presently an Acting Assistant Professor in the Department of Urology at the University of Washington School of Medicine. Dr. Maxwell is the recipient of a 5-year NIDDK Career Development Award from the National Institutes of Health to investigate a new method to noninvasively fragment kidney stones with ultrasound. His other research interests include image-guided therapies, ultrasound transducer technology, nonlinear acoustics, and cavitation.

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9:45 - 10:45a.m.

ENGR 3507

### “Noninvasive Image-Guided Therapies Based on Mechanical Effects of Ultrasound”

#### *ABSTRACT:*

Focused ultrasound surgery (FUS) is an emerging technology for noninvasive treatment of several diseases. Conventionally, this modality applies high-intensity ultrasound through the skin to precisely heat and thermally ablate a target tissue. However, new methods of image-guided FUS are being developed that employ mechanical effects of ultrasound. In particular, my research investigates techniques to noninvasively disintegrate soft tissues and calcifications. This seminar will summarize experiments on physical interactions between ultrasound and tissue leading to disintegration, such as elastic waves and acoustic cavitation. Preclinical development of therapy systems and applications to treating thrombosis, kidney stones, and other diseases will be described. These new methods may eventually lead to a versatile platform technology to perform many complex noninvasive procedures and expand the role of FUS in medicine.