

Boulder Fluid and Thermal Sciences Seminar Series



Tuesday, October 9, 2018

3:30pm-4:30pm (refreshments at 3:15pm)

Mechanical Engineering Conference Rooms in the Engineering Center

University of Colorado, Boulder

A talk about talking: how modeling human phonation can aid diagnosis of voice disorders

Sean D. Peterson

Mechanical and Mechatronics Engineering, University of Waterloo

Yelling at a football game. Whispering a secret. Singing in a band. Talking to a friend at dinner. As humans, we use our voices as a primary means to communicate information, convey our thoughts and ideas, and express our emotions to connect with others. Verbal communication is a skill that we develop in childhood and, like one of our senses, becomes second nature. This makes it all the more devastating should our ability to speak become lost or impaired due to neurological or structural injury or defect. At a structural level, human phonation involves a complex coordination of muscles to control the posturing and properties of the vocal folds (the primary sound generating source in the larynx), airflow from the lungs to drive the vocal fold motion, and acoustical waves that influence the aerodynamics and structural vibration. Understanding the mechanics of human phonation during normal and pathological speech is critical for effective treatment of voice disorders. This presentation will discuss recent efforts in our lab to elucidate the underlying physics of human phonation and pathology development, and how the developed tools in our lab can be translated to the voice clinic to aid in diagnosis and treatment of voice disorders.

Biography: Dr. Sean D. Peterson is an Associate Professor of Mechanical and Mechatronics Engineering at the University of Waterloo in Waterloo, Canada. He joined the university in 2009 as an Assistant Professor, having spent the previous two and a half years as a Visiting Assistant Professor in the Mechanical and Aerospace Engineering Department at New York University. He received his Master's and Ph.D. degrees from Purdue University in Mechanical Engineering in 2001 and 2006, respectively. Originally from San Diego, California, he attended Arizona State University for his undergraduate studies. His primary research focus is fluid mechanics, with particular interest in the intersection with biological systems. He received the Ministry of Research and Innovation Early Researcher Award in 2014 to study human phonation.

