



Department of Biomedical Engineering



Johns Hopkins School of Medicine and the Whiting School of Engineering

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Monday, October 12, 2009 at 1:30

Rome Room, Clark 110

Video-Teleconferenced to School of Medicine,
Talbot Library, Traylor 709

Light lunch will be provided in Clark 110

Towards High-Fidelity Computational Fluid Dynamics (CFD) Based Tools for Phonosurgery

Phonation is a biomechanical process that involves airflow-induced vibration of the vocal folds, and there are a number of pathologies that can lead to a loss of ability to phonate. Among these, vocal fold paralysis/paresis resulting from stroke accounts for nearly a third of all voice disorders diagnosed in the US. Nerve damage associated with a stroke can lead to incomplete glottal closure and hence an inability to produce sustained vocal-fold vibrations. One common treatment for this pathology is medialization laryngoplasty, wherein an implant is inserted into the paretic vocal fold in such a way as to force it to the glottal midline. However, the implant shape/location has to be determined intra-operatively through a trial-and-error process, and this is implicated in a fairly high revision rate. The long term objective of the current project is to develop a CFD based tools that can help with the preoperative planning of this surgical procedure and thereby reduce its revision rate. We are currently using the CFD solver to study the fundamental biophysics of phonation, and results from these studies will be presented. Supported by NIH Grant RO1DC007125.

Upcoming Seminar:
October 19: Art Shoukas, Johns Hopkins University

<http://www.hopkinsmedicine.org/ibbs/news/events.html>

<http://www.hopkinsmedicine.org/scical>

<http://www.bme.jhu.edu>

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