

Abstract Submitted
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Computational Modeling and Analysis of Phonation in a Diseased Larynx¹ QIAN XUE, XUDONG ZHENG, RAJAT MITTAL, Johns Hopkins University, STEVEN BIELAMOWICZ, George Washington University — The goal of our current research is to study the fundamental biophysics of phonation in healthy and pathological larynges. We have developed a coupled flow-structure interaction solver to help gain insight into the fundamental biophysics underlying unilateral laryngeal paralysis. The solver models the incompressible Navier-Stokes equations for the glottal aerodynamics and employs the classic two-mass model for the vocal folds. The effect of tension imbalance and subglottal pressure on the vocal fold dynamics is investigated. An analysis of the vibration modes as well as the frequency spectra and sound quality has been conducted. Results from these studies will be presented.

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