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Phonation aeroacoustic source strength estimation based on high-fidelity aeroelastic-aeroacoustic simulations FEIMI YU, LUCY ZHANG, Rensselaer Polytechnic Institute, MICHAEL KRANE, Penn State University — In this talk, the principal aeroacoustic sources of phonation are estimated from high-fidelity aeroelastic-aeroacoustic simulations. The fully-coupled simulations use the immersed finite element method. Vocal folds mimic the swept-ellipse multilayer rubber model used in coordinated experiments. Simulations were run for a range of subglottal pressures. For each simulation, the principal aeroacoustic sources were deduced. The sources include a volume source due to changes in vocal fold volume and a dipole source associated with vocal fold drag. The equivalence of vocal fold drag and transglottal pressure force, and the relationship between vocal fold drag and glottal volume flow are also evaluated.

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