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Phonation aeroacoustic sources identified from simulation[1] FEIMI YU, LUCY ZHANG, Rensselaer Polytechnic Institute, MICHAEL KRANE, Applied Research Laboratory, Penn State University — The principal aeroacoustic sources in phonation are estimated from a high-fidelity computer simulation. The simulation uses an immersed Finite Element (iFEM) formulation, supplemented by boundary condition control using Perfectly Matched Layers. 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: a volume source due to changes in vocal fold volume, and a dipole source associated with vocal fold drag. Recent arguments regarding 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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