Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Time-resolved transglottal pressure measurements in a scaled up vocal fold model[1] HUNTER RINGENBERG, University of Nebraska - Lincoln, MICHAEL KRANE, Penn State - ARL, DYLAN ROGERS, MITCHEL MISFELDT, TIMOTHY WEI, University of Nebraska - Lincoln — Experimental measurements of flow through a scaled up dynamic human vocal fold model are presented. The simplified 10x scale vocal fold model from Krane, *et al.* (2007) was used to examine fundamental features of vocal fold oscillatory motion. Of particular interest was the temporal variation of transglottal pressure multiplied by the volume flow rate through the glottis throughout an oscillation cycle. Experiments were dynamically scaled to examine a range of frequencies, 100 – 200 Hz, corresponding to the male and female voice. By using water as the working fluid, very high resolution, both spatial and temporal resolution, was achieved. Time resolved movies of flow through symmetrically oscillating vocal folds will be presented. Both individual realizations as well as phase-averaged data will be shown. Key features, such as randomness and development time of the Coanda effect, vortex shedding, and volume flow rate data have been presented in previous APS-DFD meetings. This talk will focus more on the relation between the flow and aeroacoustics associated with vocal fold oscillations.

[1]Supported by the NIH

Timothy Wei
University of Nebraska - Lincoln

Date submitted: 24 Aug 2016 Electronic form version 1.4