

## **Vocal Tract Length during Speech Production**

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### *Abstract*

It is known that formant frequencies are inversely proportional with the vocal tract length of the speaker. Although it was observed that vocal tract length of a speaker is variable during speech production, the extent of this variability has not been fully examined in the literature. This talk presents a statistical analysis of the vocal tract length of a female speaker during the production of ten sentences in French. In addition, this presentation reveals various correlations between vocal tract length, lips protrusion, and larynx height, on one side, and the parameters of Maeda's articulatory model, on the other side. This presentation proposes a linear regression model of the vocal tract length as a function of eight articulatory parameters and provides a discussion on the role of the lips and larynx height maneuvers in optimizing the production of speech in terms of achieving high speed and minimum energy.