

**ACOUSTICS2008/1723**  
**Very-low frequency range influence for free reed instruments**  
**physical modeling**

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Measurements of the inner and outer over-pressure for a diatonic harmonica were performed during blown, drawn and bend notes notably. Using an energy analysis based on a non regular spectral decomposition of the energy with only 10 frequency subbands, the IDS analysis, we have compared the relative weights of each subbands for both inner and outer pressure signals. This comparison underlines the key role played by the very low frequency range (0-50 Hz) and justifies a physical modeling without any waves occurrences but taking into account only acoustical flows descriptions. Within the presentation the audience will listen these phenomena and will access an explanation of the details of the physical modeling which has been used and which permits to refind chromatical playing on a diatonic harmonica, including the vocal tract player. We will also propose some clues to include a pipe in the modeling in order to study instruments like the sheng or the harmonium for instance.