A Formant Filtered Physical Model for Wind Instruments.[1]

Axel Nackaerts[2], Bart De Moor[3] and Rudy Lauwereins.[4]

April 2000
Submitted to IEEE Transactions on Speech and Audio Processing

[1]This report is available by anonymous ftp from *ftp.esat.kuleuven.ac.be* in the directory *pub/sista/nackaerts/reports/report_multinote.ps.gz*

[2]E-mail: *axel.nackaerts@esat.kuleuven.ac.be* This work is supported by several institutions: the Flemish Government (Mefisto-666), the FWO, and Research Communities (ICCoS and ANMMM), IWT and IWT projects (EUREKA 1562-SINOPSYS, EUREKA 2063-IMPACT, STWW), the Belgian State, Prime Minister's Office - OSTC - (IUAP P4-02 1997-2001 and IUAP P4-24 1997-2001, Sustainable Mobility Programme - Project MD/01/24 1997-2000), the European Commission (TMR Networks: ALAPEDES and System Identification, Brite/Euram Thematic Network : NICONET) and by Texas Instruments (TI-Elite program). ESAT-K.U.Leuven is member of DSP Valley.

[3]K.U.Leuven, Dept. of Electrical Engineering (ESAT), Research group SISTA, Kardinaal Mercierlaan 94, 3001 Leuven, Belgium, Tel. 32/16/32 17 09, Fax 32/16/32 19 70, WWW: *http://www.esat.kuleuven.ac.be/sista*. E-mail: *bart.demoor@esat.kuleuven.ac.be*

[4]K.U.Leuven, Dept. of Electrical Engineering (ESAT), Research group ACCA, Kardinaal Mercierlaan 94, 3001 Leuven, Belgium, Tel. 32/16/32 10 50, Fax 32/16/32 19 86, WWW: *http://www.esat.kuleuven.ac.be/acca*. E-mail: *rudy.lauwereins@esat.kuleuven.ac.be*

Abstract

In this article, we report on our research concerning the calibration of physical models for sound synthesis. The proposed method integrates the ease-of-use of sample-based synthesis with the power of physical modeling and uses the basic concepts of formant filtering. We apply this method to a single-reed, cilindrical bore instrument, the clarinet.