

ACOUSTICS2008/3139 **A study of flute control parameters**

Benoit Fabre^a, Nicolas Montgermont^a and Patricio De La Cuadra^b

^aInstitut Jean Le Rond d'Alembert / LAM (UPMC / CNRS / Ministère Culture), 11, rue de Lourmel,
75015 Paris, France

^bCentro de Investigación en Tecnologías de Audio (CITA), Universidad Católica de Chile, Alameda 340,
Oficina 13, Casilla 114-D Santiago, Chile

The sound of musical instruments played in self-sustained oscillations can be interpreted as a sounding transposition of the player's gesture. The playing of wind instruments requires an expert control of the blowing that may be difficult to grasp and to measure because it induces only very little motion of the player, as opposed to string or keyboard instruments.

In the case of instruments of the flute family, the player seems to control mainly the air jet velocity for mode selection. Flutes in which the air jet is formed between the lips allow also for a control of the total jet flow by the player, through lip adjustments.

We present measurements carried on several players, in different playing conditions. The score includes technical exercises such as scales and short musical excerpts from the flute repertoire. Time evolutions of the control parameters are analysed, based on pressure and geometrical measurement, in the framework of the current knowledge on the sound production in flutes, such as jet instability. The control over different parameters will be discussed, both for basic technical exercises and in a musical melodic context.