

# Real-time client-side physical modeling harpsichord

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As part of the [ANR Blanc Project FEEVER](#) (ANR-13-BS02-0008, 10/2013, 42 months), the [CIEREC](#) (Saint-Étienne - France) was asked by the [Museum of Art and Industry of Saint-Étienne](#) to implement a real-time synthesized harpsichord for a [special exhibition](#). A standalone version was created by Laurent Pottier and Luc Faure, all DSP edited in [FAUST](#) in a physical modeling approach, with a [Max/MSP](#) GUI (DSP based on Julius Smith and Romain Michon previous works on the [Faust-STK](#)). Our second goal was then to provide a client-side real-time harpsichord on the web, in order to share a convenient musical researching and/or production tool, as much as an educational support to anyone, even with no prior computational and/or musical knowledge.

The idea was thus to implement a polyphonic Javascript version of our model, thanks to the `faust2asmjs` script (which consists of compiling our FAUST DSP in an optimized polyphonic [asm.js](#) version), create instances, use regular Web Audio API nodes, and control DSP parameters through a responsive user-friendly GUI in [Polymer](#). Some issues were of course to face, from trying to optimize the amount of computing resources needed by the physical modeling approach (especially for near zero amplitude data), to trying to be the more "web-standard" we could concerning the GUI, despite the unbalanced implementations of W3C requirements through the mainly used web browsers (Web Audio API, Web MIDI API, Web Components).

You will find our still evolving web harpsichord version here: <http://musinf.univ-st-etienne.fr/recherches/ClavecinHtml/web-harpsichord.html>.

You will also find a quick video demonstration of our first stand-alone version (FAUST DSP - Max/MSP GUI) here: <http://feever.fr/videos>.