

Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Aeroacoustic sound radiated from a flow past an oscillating and a fixed cylinder in tandem YUJI HATTORI, IFS, Tohoku University, RYU KOMATSU, Graduate School of Information Science, Tohoku University — The aeroacoustic sound generated in a two-dimensional flow past two circular cylinders in tandem is studied. The upstream cylinder is forced to oscillate transversely, while the downstream cylinder is fixed. This flow is a simplified model of the sound generation due to the interaction of rotating wings and a strut. The sound is captured by direct numerical simulation of the compressible Navier-Stokes equations using the volume penalization method. The amplitude of the sound increases in general with the amplitude and the frequency of the oscillation of the upstream cylinder. However, large reduction of the sound occurs for particular choices of parameter values as the forces acting on the two cylinders are in anti-phase.

Yuji Hattori
IFS, Tohoku University

Date submitted: 01 Aug 2013

Electronic form version 1.4