

# Well posed problem in sense of Hadamard, for a source produced acoustic perturbation propagation in a lined duct, carrying a gas flow

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## ABSTRACT.

The purpose of this paper is to replace Brambley's concept of "well posed differential equation" (J. Sound Vibr., 322 (2009) 1026-1037), related to the source produced acoustic perturbation propagation in a rectangular lined duct carrying a gas flow, with that of "well posed problem in Hadamard sense". The reason is that the concept introduced by Brambley is confusing, i.e. the same equation can be well posed or ill posed depending on the functional framework. For the source produced acoustic perturbation (SPAP) propagation problem the concept of "well posed problem in Hadamard sense" is defined as follows: for any SPAP, from a given set of SPAP-s, there exists a unique solution to the problem of propagation and the solution depends continuously on the SPAP. Necessary or sufficient conditions are derived for that the propagation problem be well posed in sense of Hadamard.

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