Identification and modification of acoustic sources in a turbulent flow past past a cavity

Project leaders
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Research theme
Complex dynamics of fluids

Participants
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Cooperations
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Funded
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Project aim

Identification of sound sources in a turbulent flow past a cavity and development of a strategy to reduce sound emission.

Progress

An experimental model has been designed and build. It consist of a flat plate in which a rectangular cavity take place. The dimension of the cavity can be adjusted. The model is instrumented with eleven pressure sensor. Two measurements campaigns has been carried out in the vertical wind tunnel of the aerospace faculty at TuDelft. Measurements consisted of particle image velocimetry measurements syncronized with wall pressure fluctuation measurements and far field noise measurements. In these measures particular attention was given to the influence of the incoming boundary layer characteristics on the sound production. For this reason measurements with both a laminar and a turbulent boundary layers have been performed. Results shows how the thickness of the incoming boundary layer is an essential parameter for the generation of tonal noise.

Dissertations

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Scientific publications

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