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JISFA1#4 - Reverse problems and Analytical Sensitivity analysis for landing gear noise calibration and prediction

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Reverse problems are used in order to calibrate landing gears noise spectra. The idea consists to minimize a least square function where the SMITH semi-empirical spectrum is optimized with respect to the experimental measured data. Hence, the SMITH "empirical" parameters are the control parameters for these acoustics optimization problems. The number of these optimization parameters can quickly increase when it concerns real landing gears with hundreds of components. An analytical sensitivity analysis is carried out using SMITH analytical formulations in order to identify the most sensitive and influencing control parameters and to reduce significantly the big number of optimization parameters. The optimized SMITH numerical coefficients can be efficiently used to predict the noise of news landing gear configurations.

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