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# Handling uncertainties in mixed numerical-experimental techniques for vibration based material identification

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## Abstract

Mixed numerical-experimental techniques (MNETs) combine experimental test results and numerical modelling techniques with the goal of identifying physical properties. Experimental results always come with a level of uncertainty. This input uncertainty will migrate through the MNET routine, and will result in an uncertainty on the identified parameters. Therefore, MNET procedures should not only provide an estimated value for the physical properties, they should also provide additional information about the reliability of the results obtained. This paper presents a routine that is able to transform the uncertainty on the input parameters of a MNET into the uncertainty on the output parameters. The approach does not require any change of the initial MNET routine, it is just an additional computational step that has to be performed after the MNET has identified the deterministic values of the unknown physical properties. The routine is demonstrated on a vibration based MNET used to identify elastic material properties.

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