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Can I trust my TPA results?

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In the automotive development process, Transfer Path Analysis (TPA) is a widely known tool for troubleshooting purposes of existing vehicles or for the prediction of vehicle interior noise based on test bench or CAE data. There are many different approaches, each having its pros and cons. Either determining interface forces while the source is disconnected or equivalent forces for in-situ condition; measured in the vehicle or at the test bench; calculated in frequency domain or in time domain. As different as the approaches are in detail, one question they all have in common: How reliable are their results?

Within this paper, the need of a validation and refinement process of the TPA model - independent of the specific TPA method - is discussed and illustrated by typical application examples. New tools like the Mosaic View for the visualization of the crosstalk and useful procedures like the Root Cause Analysis and the Model Robustness Check are exemplified. Furthermore, these technologies are evaluated to show their potential for the identification of errors in the TPA model and how to deal with them in order to increase the liability.

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