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Structural transfer path analysis using normal frequency response functions

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Structural transfer path analysis describes the total interior sound pressure level as a vector sum of individual contributions from the powertrain force inputs entering the unibody over the engine and exhaust mounts. In this work, a hybrid transfer path analysis method that utilizes computational and experimental studies is proposed. Computational transfer path analysis is important to achieve modification studies, but the frequency response functions obtained do not contain the damping information. On the other hand, complex frequency response functions measured during the experimentation have the damping information embedded in. However, it is possible to separate damping form the frequency response functions measured. These damping free functions are called as normal frequency response functions. Correlation is made between the undamped computational model of the structure and normal frequency response functions derived from experimental transfer path analysis study. The proposed method essentially makes use of the viscous damping identified in the experimental step. Viscous damping data are computed separately and imposed on the final computational model. In this talk, important advantages of the method and a reference application will be presented. Results of the application demonstrate that the method proposed works well with real problems.

Biography

Akin Oktav received his PhD degree in Mechanical Engineering from Bogazici University. Currently, he is working as a Specialist in the Vibration and Acoustics Laboratory of Bogazici University. His research interests include structural model updating, vehicle noise variability, identification of damping and modification for vehicle acoustic problems.

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