Vibro-acoustic Modeling, Analysis and Optimization Using COMSOL Multiphysics

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Abstract

Vibro-acoustics encompasses the study of interaction between sound and vibration. For example, sound transmission analysis is important to design vehicle bodies and building partitions, advanced noise control technologies can ease the increasing noise pollution problem in densely populated cities, and hearing-aid is a good application of acoustics in biomedical engineering. In IHPC, we extensively use vibro-acoustic modelling tools to design materials, structures and devices for better acoustic performance. The features in COMSOL Multiphysics allow us to conduct analysis and even optimization in a cost-effective way. In this talk, we will share some of our research and industrial projects involving modeling and simulation using COMSOL. The application examples cover various topics including sound insulation design, silencer and ventilation window, sound absorbing material, and biomedical device.