

ACOUSTICS2008/2462
Characterising elastic layers as non-lightly damped SDOF systems
for the reduction of impact transmission noise

Francisco Simon and David Anthony
Instituto de Acústica (CSIC), C/ Serrano 144, 28006 Madrid, Spain

There is a wealth of literature dealing with modal determination of lightly damped viscous systems, however there is relatively little reported for medium and heavily damped systems or with non-viscous damping. The most commonly reported and applied methods have significant errors in the determination of both modal frequency and damping ratio for systems with high damping. For the lightly damped case simplification can be often conveniently made to allow the performance of each method to be studied theoretically, however for the non-lightly damped case this is not possible and the analysis must proceed on a heuristic basis. For the application modal parameter determination of elastic floor layers designed to reduce building transmission noise by impact testing, traditional and new methods of modal parameter determination for non-lightly are presented and heuristically evaluated for both viscous and non-viscous SDOF systems. It is also shown the performance often depends on the type of damping. This either must be known a priori or can be gleaned by comparing results from different methods.