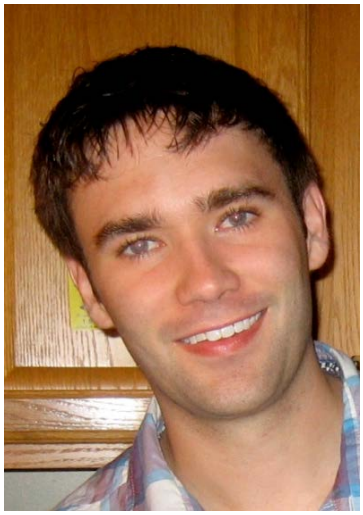
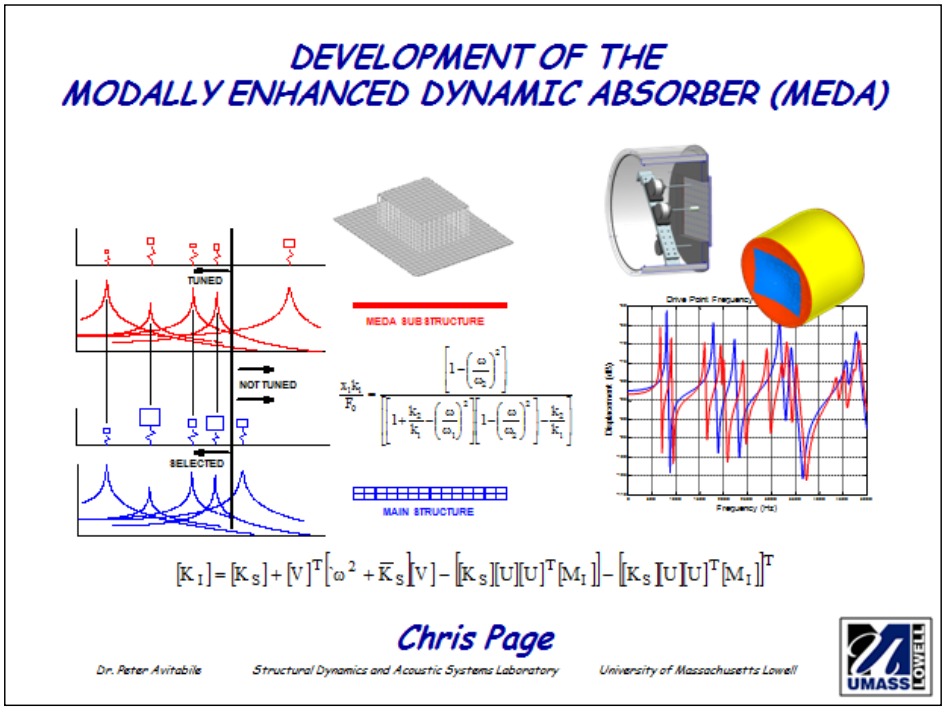
MASTER'S THESIS – CHRIS PAGE

MODALLY ENHANCED DYNAMIC ABSORBER - MEDA





Often structure borne noise has a deleterious effect on both the performance and aesthetics of many commercial and military systems. Noise issues can be dealt with many ways through the incorporation of active, semi-active and passive solutions. A common passive approach to solving structural vibration problems is to use a tuned vibration absorber. Tuned absorbers are generally used to affect a single undesirable resonance at a time. In order to affect multiple resonances multiple tuned absorbers are typically required, causing the design and implementation to be prohibitively difficult.

This paper develops the concept of a Modally Enhanced Dynamic Absorber (MEDA) that can be used for the suppression of multiple structural resonances. The MEDA is an auxiliary substructure designed to achieve a multi-resonance tuned absorber effect. Modal characteristics derived from a primary structure are used as design targets for the MEDA substructure. Preliminary analytical studies have been undertaken to demonstrate the MEDA concept on simple structures. The results show that the MEDA concept is a viable approach to detune multiple modes simultaneously.

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