1023-34-154 **Michael R. Huber*** (huber@muhlenberg.edu), Trumbower Hall Room 110, 2400 Chew Street, Allentown, PA 18104, and **Jonathan L. Paynter** and **Zachary W. Seidel**. *Blending Mechanical Engineering With Mathematics to Create Interdisciplinary Lively Application Projects (ILAPs).* Preliminary report.

We want to increase interest in and understanding of higher level mathematics by providing interdisciplinary lively application projects (ILAPs) for undergraduate students based on the real-world applications and effects of resonance as a design-driving force and capability-limiting constraint. Physical systems with mechanical vibrations offer excellent examples of second-order, ordinary differential equations. For their mathematics capstone research project, students audited a mechanical engineering course in vibrations in order to gather examples of these physical systems. They then modeled and solved these systems with second-order, ordinary differential equations using step or impulse forcing functions. In this presentation, we will present models and solutions found for three systems: the vibration of a radio mount in a vehicle which receives an impact force from a collision, the vibration in a building due to nearby excavation blasting, and the vibration of stadium light poles due to non-constant wind shear. This research project presents an excellent interdisciplinary blending of mechanical engineering and mathematics. (Received August 15, 2006)