



**SBEL/WACC Brown Bag Seminar  
Thursday, October 9th at 2PM  
In room 4150ME**

**Justin Madsen, "Common tire models in Project Chrono: theory, implementation and validation against commercial software"**

**Description:** As part of the Create-GV project, a joint effort with US Army TARDEC and University of Mississippi State, tire models commonly found in commercial vehicle dynamics software were implemented in the Chrono open-source dynamics engine (<http://projectchrono.org>). Very detailed and high-fidelity software tools for specific systems in the vehicle, e.g., the engine or driver control, are co-simulated with the vehicle and virtual environment in Chrono. Each of these separate external modules will be tested under normal vehicle operating conditions and for a wide variety of driving maneuvers. The Pacejka Magic Formula model was implemented and validated against the commercial software Adams/Car, which has an advanced Pac2002 model. An extension to the approach was also adopted to provide better results when the wheel inputs were varied quickly (steer angle, throttle, brake). The final model has been validated for both pure and combined input slip cases, and for both slowly and quickly performed maneuvers, summarized as a set of technical reports available on the [SBEL website](#).