Intelligent Vehicle Dynamics and Control

Jeff Stein
Thrust Area I Leader
Phase I: Completed Research

- Active Suspension Models
- Proper Tire Models
- Model Reduction of Vehicle Dynamics Models
- Efficient Equation Formulation
- Worst-Case Maneuvers for the Rollover
- Arcsim: M916 - Vehicle Dynamics Simulation Software
Phase II: New Directions

1. Design of Dynamic Systems
   - Global vs. Output specific design parameters
   - Kinematics vs. Energy elements

2. Model Validation and Accuracy

3. Active Safety Systems
   - High fidelity rollover models
   - Rollover warning
   - Active control of differential braking

4. Proper Driveline Models - VESIM
Presentations

1. Augmentation of Design of Experiments with an Energy-Based Metric for Ride Quality Studies
   - Bjorn Christensen

2. Proper Model Accuracy and Validation
   - Polat Sendur

3. Warning and Control Algorithms for Vehicle Rollover Prevention
   - Bo-Chiuan Chen

4. Proper Modeling of Integrated Vehicle Systems
   - Geoff Rideout   3:30-4:00   Room 1012