

# Sponsors



# About CVeSS

The Center for Vehicle Systems and Safety (CVeSS) at Virginia Tech was established in 2004 by Dr. Mehdi Ahmadian, professor of Mechanical Engineering, and director of CVeSS. The center consists of three laboratories: The Advanced Vehicle Dynamics Laboratory (AVDL, established 1995), Virginia Institute for Performance Engineering and Research (VIPER, established 2004), and Railway Technology Laboratory (RTL, established 2004). The center is served by four full-time faculty, more than twenty graduate students, several undergraduate students and technical personnel. Several other Virginia Tech faculty members and visiting scholars are CVeSS affiliate faculty.



# Affiliate Faculty



**Virginia Tech**  
**CENTER FOR VEHICLE  
 SYSTEMS & SAFETY**

<http://www.me.vt.edu/AVDL>



**Advanced Vehicle  
 Dynamics Laboratory**



**VIPER**  
 Virginia Institute for Performance  
 Engineering and Research



**RTL**  
 Railway Technologies Laboratory



## Research

**Current CVeSS projects are in the following research areas:**

- Vehicle dynamics for off-road and on-road applications
- Advanced suspension systems using magneto rheological fluids
- Noise and vibrations
- On-board sensors
- Real-time control methodologies
- Stochastic soil and terrain profile characterization and modeling
- Efficient modeling of multibody dynamic systems with uncertainties
- Tire and track modeling
- Vehicle-terrain interaction (terramechanics)
- Analysis, characterization, and design of adhesively bonded insulated joints
- Broken rail detection using smart materials and impedance
- Optical fiber Doppler sensors for measurement of rail friction
- Automated measurement of curve movement
- Effective methods for detecting crew alertness
- Innovative design concepts for insulated rail joints

## Faculty



**Dr. Mehdi Ahmadian**  
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Professor  
Mechanical Engineering  
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Dr. Ahmadian received his Ph.D. from State University of New York at Buffalo in 1984. He taught at Clemson from 1984 to 1987. After working at Lord Corporation as a Staff Engineer and at General Electric Transportation Systems as a Lead Design Engineer, Dr. Ahmadian came to Virginia Tech in 1995. He is the founding director of AVDL, and is currently a Professor of Mechanical Engineering, Director of CVeSS and RTL.



**Dr. Corina Sandu**  
Director **AVDL**  
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Dr. Sandu received her Ph.D. from The University of Iowa in 2000. She worked at Michigan Tech as a visiting and research faculty for three years. Dr. Sandu came to Virginia Tech in Aug. 2003 as an Assistant Professor of Mechanical Engineering. Since Sept. 2004 she has been the Director of AVDL.



**Dr. Steve Southward**  
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Dr. Southward received his Ph.D. from Michigan State Univ. in 1990. He worked for Lord Corporation from 1990 to 2005. During this time, he served as an adjunct assistant professor at North Carolina State University, at Duke University (1992-1999), and for one year at Virginia Tech. Southward joined Virginia Tech and the VIPER laboratory in Aug. 2005 as an Associate Professor of Mechanical Engineering.



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Dr. Ferris received his Ph.D. from The University of Michigan in 1995. He worked from 1990 until 2001 as a technical specialist with the chassis development and advanced vehicle groups of Daimler-Chrysler Corporation in Michigan. Between 2001 and 2005 Dr. Ferris has been employed as a senior technical specialist with ZF Technologies in Michigan. He joined Virginia Tech and the VIPER laboratory in Aug. 2005 as an Associate Professor of Mechanical Engineering.