The structural engineering and applied mechanics (STAM) group performs multi-disciplinary research in the areas of structural engineering, structural mechanics, advanced design, structural vibrations, and finite element modeling and analysis. Our faculty has expertise in both structural engineering, involving the design of buildings, bridges, and other structures, as well as applied mechanics, which forms the basis of all structural analysis and design.

The STAM group’s research activities are funded by numerous federal and state government agencies, regional organizations and industry, including the following: the National Science Foundation (NSF), the U.S. DOT Federal Highway Administration (FHWA), the U.S. DOT Federal Railroad Administration (FRA), the Department of Defense (DOD), the Department of Homeland Security (DHS), the Office of Naval Research (ONR), the National Institutes of Health (NIH), the U.S. Economic Development Administration, the National Cooperative Highway Research Program (NCHRP), the National Aeronautics and Space Administration (NASA), the Connecticut Department of Transportation (ConnDOT), the New England Transportation Consortium (NETC), the Hamilton Sundstrand Space Systems International, the Honeybee Robotics Spacecraft Mechanisms Corporation, Bentley Systems, Inc., the NASA/Connecticut Space Grant Consortium, the Japan Society for the Promotion of Science (JSPS Short Term Fellowship), and the University of Connecticut.
MAJOR RECENT STRUCTURAL ENGINEERING AND APPLIED MECHANICS PROJECTS

- The National Cooperative Highway Research Program (NCHRP) is sponsoring “Evaluating the Effectiveness of Vibration-Mitigation Devices for Structural Supports of Signs, Luminaires, and Traffic Signals.” Funding: $400,000. PI: Richard Christenson

- The Office of Naval Research (ONR) through Connecticut Department of Transportation is sponsoring “Repair of Steel Bridges.” Funding: $677,000. PI: Arash Esmaili Zaghi, Co-PI: Kay Wille

- The Office of Naval Research (ONR) through Defense University Research Instrumentation Program (DURIP) is sponsoring “Six-Degree-of-Freedom Shake Table and Instrumentation for Real-Time Hybrid Substructuring (RTHS) Investigations of Complex Multi-Path Marine Systems.” Funding: $473,073. PI: Richard Christenson

- The Federal Highway Administration (FHWA) through Connecticut Department of Transportation is sponsoring “Advancing the State of Bridge Weigh-In-Motion for the Connecticut Transportation Network.” Funding: $302,999. PI: Richard Christenson Co-PIs: Sarira Motaref and Shinae Jang

- The National Science Foundation is sponsoring “SAVI/Collaborative Research: Pacific Rim Earthquake Engineering Mitigation Protective Technologies International Virtual Environment.” Funding: $170,115. PI: Richard Christenson

- The National Science Foundation is sponsoring “NEESR Planning/ Collaborative Research: Toward Experimental Verification of Controllable Damping Strategies for Base Isolated Buildings.” Funding: $249,550. PI: Richard Christenson

- The U.S. Economic Development Administration is sponsoring “Connecticut Manufacturing Simulation Center.” Funding: $2.1 million (match amount: $1 million). Director: Jeongho Kim

- The National Institutes of Health is sponsoring the research project “Viscoelastic Modeling Aided Experimental Optimization toward Fracture-Resistant Porcelain-Veneered Zirconia and Lithium Disilicate Restorations.” Funding: $633,000. PI: Jeongho Kim

- The U.S DOT Federal Railroad Administration (FRA)/Transportation Research Board (TRB), National Academy of Sciences (NAS) Washington, D.C. is sponsoring the Rail Safety IDEA project “Dynamic Impact Factors on Existing Long-Span Truss Railroad Bridges.” Funding: $100,000. PI: Ramesh B. Malla

- The National Science Foundation is sponsoring “CAREER: Understanding polymer adsorption kinetics and dispersion mechanisms of pozzolanic nano-sized particles in cementitious materials” Funding: $500,000. PI: Kay Wille

- The National Science Foundation is sponsoring “CAREER: Promoting Engineering Innovation through Increased Neurodiversity by Encouraging the Participation of Students with ADHD.” Funding: $520,000. PI: Arash Esmaili Zaghi

- The National Science Foundation is sponsoring “PFI: AIR-TT: A Hybrid Metal/Glass Composite System for Multihazard Resilient Bridge Columns.” Funding: $246,000. PI: Arash Esmaili Zaghi

- The National Science Foundation is sponsoring “REU Site: Research Experience in Cyber and Civil Infrastructure Security for Students with ADHD: Fostering Innovation.” Funding: $420,000. PI: Arash Esmaili Zaghi

- The Federal Highway Administration through the Connecticut Department of Transportation is sponsoring “Repair of Steel Bridges.” Funding: $520,000. PI: Arash Esmaili Zaghi

- The National Science Foundation is sponsoring “Collaborative Research: Fatigue Damage Prognosis for Slender Coastal Bridges.” Funding: $283,672. PI: Wei Zhang

- The Office of Naval Research (ONR) through Connecticut Department of Transportation is sponsoring “Repair of Steel Bridges.” Funding: $677,000. PI: Arash Esmaili Zaghi, Co-PI: Kay Wille

- The Federal Highway Administration (FHWA) through Connecticut Department of Transportation is sponsoring “Funding: $283,672, PI: Wei Zhang.


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