

Home Address:
786 Parkwood Drive
Ste. Genevieve, Mo.
63670

Brandon C. Gegg

Email Address: bgegg@yahoo.com

Phone List:
Home: 573-883-7214
Cell: 573-880-0040
Work: 573-883-2788

Objective A position as a mechanical engineer, with specific knowledge in dynamics, vibration, and discontinuous systems.

Education **Southern Illinois University Edwardsville, Edwardsville, Il., Aug. 1999-Present**
Graduate Study, M.S.M.E. expect to graduate, May 2005
B.S. Mechanical Engineering with Mathematics Minor, August 2002

Graduate Coursework:

✚ Mechanical Vibrations	✚ Advanced Dynamics	✚ Engineering Numerical Analysis
✚ Advanced Vibration with Applications	✚ Modern Control Theory	✚ Advanced Diff. Equations & Fourier Analysis (Partial Differential Equations)
✚ Advanced Strength & Stress Analysis & Lab	✚ Robotics: Dynamics & Control	

Computer Skills **Specific Knowledge:**

✚ Solidworks	✚ Fortran 95	✚ AutoCAD
✚ Microsoft Office	✚ Matlab,	✚ Sigma Plot

Academic Experience: **Masters Thesis: SIUE, Jan. 2004-Present**
Analytical conditions for prediction of periodic stick and non-stick motions in a friction-induced oscillator with a single velocity constraint are developed. The Poincare mapping was constructed through the velocity discontinuity boundary. The mapping structure of the periodic motions was developed to analytically obtain the periodic responses of the friction-induced oscillator. Numerical simulations were carried out for verification of this analytical study. Significance of this study lies in the improvement of the design and control of such an oscillator.

The development of the thesis was dependent upon completion and revision of a program capable of simulating the motion of the mechanical model. Solutions in their exact form resultant from the equation of motion are used for simulation. Through the motion in the phase plane, the functions describing the motion are concluded in a mapping definition. This mapping definition allows the entire motion to be captured in a systematic form. The mapping structure is used to analytically predict the periodic motion of the oscillator. A corresponding stability analysis is completed to shed light on the change of the response due a change in the initial conditions. The predicted solution and stability analysis are presented and verified through simulation. Additional constraints are used during prediction to prevent imaginary solutions from being discovered. All predicted motion is subjected to a force analysis to determine the proximity to the bifurcation boundaries. Multiple programs have been created to handle the previously described analyses.

Industry Experience:	<p>Laboratory Manager, SIUE, Aug. 2004-Present Manage all the mechanical engineering department laboratories. Develop a schedule for maintenance and preventative updates for the computers in all laboratories. Aid in the undergraduate laboratories and furnish updated and accurate lab manuals for such classes. Complete surveys of need among the professors and supply the needs of the research projects for all the specific disciplines of the department. Assist the cooperative efforts of corporations and the university to create a comfortable, professional and smoothly flowing research environment.</p> <p>Graduate Assistantship, SIUE, May 2004-Aug. 2004 Teaching assistant for ME 452, Vibrations class, graduate/undergraduate students.</p> <p>Research Project, SIUE, May 2004-Aug. 2004 Tensile and hardness testing of fasteners, the Hardness tester and the Hydraulic Tensile testing machines, in the M.E. Stress Analysis Lab and the ME Structures Lab, were used to complete the project. Installation of the operating system and tuning of the control system was necessary for accurate results. This project was supported by Basler Electric Co. Inc.</p> <p>Research Assistantship, Structural Testing, SIUE, Jan. 2004-May 2004 Seismic Analysis of telecommunication rack in accordance with ICBO AC 156 specification, a certification testing required by law in high risk seismic zones. The testing required an analytical analysis of the hydraulic shaking table to create the required acceleration spectrum. The project included analysis of the structure at several different weight scenarios and structure orientations. This project was supported by Cooper B-Line Inc.</p> <p>Research Assistantship, Structural Testing, SIUE, Nov. 2003-Jan. 2004 Dynamic Analysis of a telecommunication rack in accordance with customer specifications. This project required a complete analysis of the hydraulic shaking table mechanical, power, and control systems to verify the response of the system. The rack was analyzed at several weight scenarios and orientations. This project was supported by Cooper B-Line Inc.</p>
Work Experience:	<p>H.F. Gegg Materials Co. Inc., Ste. Genevieve, Mo. June 1994 - Present Supervisor / Heavy Equipment Operator / Mechanic</p> <ul style="list-style-type: none"> ○ Assistant to Civil Engineer; through selection and implementation of state approved disposal system. ○ Completed projects via teamwork while maintaining a high level of safety and quality. ○ Trained, motivated and evaluated new employees.

**Academic
Achievements:**

Publications:

Journal publications

1. Albert C.J. Luo and Brandon C. Gegg, “*On the Mechanism of Stick and Non-stick, Periodic motions in a Forced linear oscillator including Dry Friction*”, ASME Journal of Vibration and Acoustics, revised.
2. Albert C.J. Luo and Brandon C. Gegg, “*Grazing Phenomena in a Periodically Forced, Friction-Induced, Linear Oscillator*”; Communications in Nonlinear Science and Numerical Simulation, in Press.
3. Albert C.J. Luo and Brandon C. Gegg, “*Stick and Non-Stick Periodic Motions in a Periodically Forced, Linear Oscillator with Dry Friction*”; Journal of Sound and Vibration, under review.
4. Albert C.J. Luo and Brandon C. Gegg, “*Analytical Prediction of Stick motion in a Periodically Forced, Linear Oscillator with Dry Friction*”; in preparation.

Conference Publications and Presentations

1. Albert C.J. Luo and Brandon C. Gegg, “*On the Mechanism of Stick and Non-stick, Periodic Motions in a Forced Linear Oscillator including Dry Friction*”, IMECE2004-59218. ASME IMECE 2004, Anaheim, California
 2. Albert C.J. Luo and Brandon C. Gegg, “*Stick and Non-stick Periodic Motions in a Forced Oscillator with dry Friction*”, Tenth Conference on Nonlinear Vibration, Virginia Polytechnic Institute of Technology and State University, July 2004.
 3. Albert C.J. Luo and Brandon C. Gegg, “*Periodic Motions in a Forced Oscillator with dry Friction*”, Symposium on Understanding Complex Systems, University of Illinois, May 2004
 4. Brandon C. Gegg, “*Periodic Motions in a Forced Oscillator with dry Friction*”; Graduate Student Research Symposium, Southern Illinois University At Edwardsville, March 2004.
- Student member of American Society of Mechanical Engineers.