OIA Doctoral Travel Grant for Global Opportunities DTG-GO
1 message

sms287@lehigh.edu <noreply@lehigh.edu> Fri, Feb 12, 2016 at 3:50 PM
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To: cdl215@lehigh.edu

Someone has applied for DTG-GO

Recipient Data:
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Response Summary:
First Name
Frank

Last Name
Artmont

Email
faa212@lehigh.edu

Phone number
5702394655

College of enrollment
Engineering

Major field of study
Structural Engineering

Faculty advisor name
Richard Sause

Do you currently have a university assistantship or fellowship? If yes, choose the correct box below.

Are you currently funded by an external organization? If yes, choose the correct box below.
Other, please describe below. -- Previously funded by industrial project, but project principal investigator left Lehigh

Choose the type of activity
Presentation at Conference

Title
Presentation of Paper Entitled "Evaluation of a Material Model for Sliding Springs in Modular Bridge Expansion Joint Systems" at IABMAS Conference 2016 in Foz do Iguacu, Brazil

Location and Dates of Program/Conference
Foz do Iguacu, Brazil, June 26 - June 30, 2016

Abstract
Please provide a 3 - 5 sentence abstract (no more than 250 words) that clearly describes what is proposed and how the proposed experience will enhance the applicant's education significantly. Please note: This abstract must be suitable for use in a media release if the proposed activity is funded.

According to the American Society of Civil Engineers (ASCE), one in nine bridges in the United States is rated as structurally deficient. In many of these bridges, the poor rating has been caused by failed or poorly designed expansion joints having permitted drainage to penetrate and corrode the bridge superstructure. As such, work has been ongoing to improve the function and resiliency of expansion joints to reduce maintenance and replacement costs. Improved design and maintenance of bridge expansion joints, among other bridge components, has been advanced throughout the years by the International Association of Bridge Maintenance and Safety (IABMAS). Presentations by researchers and practitioners at yearly IABMAS conferences help to promote advances in the research of bridge safety and resiliency. My doctoral dissertation research, which has focused on improving the performance of modular bridge joint systems used in medium and long span structures, is in perfect alignment with the goals of IABMAS. The presentation of an important portion of my doctoral research work at an internationally-renowned IABMAS conference will allow me to strengthen and improve my technical knowledge, network with important persons in structural engineering, and form new relationships with fellow structural and bridge engineers.

Detailed proposal of research/scholarly work
In no more than 1000 words, describe the objectives and approach of your proposed research activity. Make clear how it relates to your immediate and long-term doctoral goals. Include a time-line for preparing for and completing the proposed activity.

The paper to be presented at the conference forms an important portion of my doctoral dissertation work involving the investigation of the dynamic behavior and fatigue performance of modular bridge joint systems (MBJS). These joint systems, often used to accommodate large expansion movements in modern bridges, are assemblies of steel and polymeric components and exhibit complex response under ambient loading. In particular, the elastomeric components exhibit rate-dependency, non-linear elasticity, and hysteretic response, which contribute to the dynamic response characteristics of the system. Research was performed to quantify the non-linear hysteretic behavior of elastomeric sliding springs within single support bar modular bridge expansion joint systems. A material model incorporating non-linear and time-dependent material behaviors was evaluated for accuracy and ease of use by comparing finite element analyses with experimental data. A genetic algorithm was used to optimize the material model parameters with an objective of reducing the error between analytical and experimental results. The material model demonstrated good correlation with the experimental results, indicating that it could be utilized in representing the elastomeric sliding springs within MBJS.

The proposed material model will be used in all-encompassing models of MBJS, to be analyzed during the next and final stage of my doctoral dissertation research. Such models of the MBJS will allow the dynamic properties of the system to be adequately predicted, subsequently allowing these properties to be used during design of the systems. By designing the systems according to more accurate models, the designs will be more resilient and allow more efficient use of material. More efficient and resilient design of MBJS is the most important goal of my doctoral dissertation, and as such, presentation of this work and subsequent acceptance by the international structural engineering community is essential for the success of my scholarly dissertation work.

Traveling to the 2016 IABMAS Conference in Brazil and presenting the paper, which has been accepted for presentation and publication in the conference proceedings, will allow me to connect with practitioners and researchers from around the world and discuss my work with structural and bridge engineering experts. The networking opportunities will allow for me to create professional relationships that will last my entire career and technical discussions with fellow engineers will pave the way for future collaboration with the international community.

Thank you for your consideration and time.

Total budget. Enter numbers only, no currency signs.
2500

Funds secured from other sources. Please list each source and the amount below. Enter numbers only, no currency signs.
0, currently attempting to acquire funding from employer

Remaining balance. Enter numbers only, no currency signs.
2500

Amount you are requesting as a DTG-GO grant. Enter numbers only, no currency signs.
1500

Please upload a Faculty Letter of Support Specifically detailing the impact this experience will have on your degree program.

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Hi Colette,

My name is Frank Artmont, and I am a PhD student at Lehigh. I had applied for an international travel grant for a conference I plan to attend in Brazil in June, and since submitting the application, I was able to secure some additional travel funding from my engineering firm (I unfortunately had to leave Lehigh at the end of last semester due to lack of funding for graduate students in our department). I don't think I put this on my application, because at the time I didn't think it was a possibility. I know sometimes the results of these applications are affected by whether or not you are looking for other sources of funding, and I want to make it clear that I was looking and was able to find some.

I had mentioned this to Kathleen Hutnik, who told me that I should let you know so that you may update my application accordingly.

Please let me know if you need anything else from me.

Thanks,
Frank

Frank A. Artmont, EIT
Ph.D. Candidate - Structural Engineering
Department of Civil and Environmental Engineering
Lehigh University
Mobile: (570) 239-4655
Email: faa212@lehigh.edu
Website: www.lehigh.edu/~faa212