**REQUEST FOR CONFERENCE TRAVEL FUNDS**

College of Engineering

Office of Graduate Education and Interdisciplinary Programs

Applicant must be making an oral presentation of research at the conference.

**IMPORTANT: All fields need to be completed.**

Download and save this form as a Word document, complete all areas, and then print the form for the signatures. No electronic signatures permitted. Scan and submit it as an email attachment to engrgrad@purdue.edu.

**Please submit this form several weeks prior to your conference and allow at least a week for processing.**

Student’s name: Fei Tao Student’s e-mail address: tfei@purdue.edu

Advisor’s name: Wenbin Yu Advisor’s email: wenbinyu@purdue.edu

CoE School: AAE Date of preliminary exam: 12/11/2020 Anticipated graduation date: 05/ 01/2022

(mm/dd/yyyy) (mm/yyyy)

Conference title: AIAA SciTech 2022

Conference dates: 01/03/2022 to 01/07/2022 Conference location: San Diego, CA, US

(mm/dd/yy) (City, State or Country)

Title of presentation(s):

1. Structural Design Optimization of Composite Rotor Blades with Strength Considerations

Names of authors on each paper presented:

1. Su Tian, Fei Tao, Haodong Du, Wenbin Yu, Joon Lim, Robert Haehnel, Yonghu Wenren, Luke Allen

Titles of 3 most important technical sessions you plan to attend:

1. Structural Optimization and Multiscale Modeling I
2. Structural Optimization and Multiscale Modeling II
3. Artificial Intelligence and Machine Learning for Problems in Structures and Materials

Mark the activities in which you plan to participate at the conference other than attending sessions.

Technical division meetings ■ Working group meetings □ Governance meetings □

Exhibitions ■ Receptions □ Mixers ■ Workshops ■ Other (please specify) \_\_\_\_\_\_\_\_\_\_\_

People (name and affiliation) you want to meet or hear at the conference (list three). What will you ask them?

1. Olivier Bauchau, Professor of Aerospace Engineering at University of Maryland, College Park. His research addresses the understanding of multibody dynamics, rotorcraft aero-mechanical comprehensive modeling, structural dynamics, and composites materials and structures. Prof. Bauchau is the author of the multibody dynamics code Dymore. In our paper, I used Dymore to perform the blade planform optimization of the helicopter. I plan to specifically discuss improving the rotor blade performance by changing blade material from metal to composites.
2. Anthony M. Waas, Professor of Mechanical Engineering, Chair of Aerospace Engineering at the University of Michigan, Ann Arbor. Prof. Waas's research focuses on studying the mechanism of damage, fracture, and instabilities of composites. Their research is accomplished through various experiments, such as digital image correlation (DIC) test and finite element simulations. I plan to specifically ask him for some DIC results of unidirectional composite laminate. I want to use these data to demonstrate apply a novel machine learning model for discovering the constitutive law of composites.
3. Xiao Heng, Associate Professor of Aerospace & Ocean Engineering at Virginia Tech. His research aims to advance the fundamental understanding and predictive modeling of complex, multi-scale physical systems in aerospace and ocean engineering, with particular emphasis on fluid flows, turbulence, and dispersed phases. I plan to specifically discuss the method to harvest high-quality data for data-driven constitutive modeling.

**Goal 1: How, specifically, do you expect this conference to advance your research and career, and enhance your professional skills.**

I plan to graduate in May 2022. This conference will be a cornerstone for my career development as it will be the last conference I attend before my graduation. I plan to pursue a professor position after graduation. This conference provides a great opportunity to network with other professors and university searching committees. Specifically, I would like to talk to Prof. Bayless, who is the department head of Mechanical and Aerospace Engineering of Missouri S&T University and is looking for faculty for their department, about the potential application of machine learning in data-driven constitutive modeling of composites. In addition, I plan to meet Prof. Xin Liu of UT Arlington, who conducted extensive research in data-driven constitutive modeling, about a potential collaboration on learning the viscoelastic constitutive law of woven composites with FE coupled neural network. Building such relationships will create more opportunities for my career and increase the reputation of Purdue University.

**Goal 2: How do you plan to share what you learned with your fellow students at Purdue?**

I will make a presentation during the group meeting to list the papers and researchers that are making the process toward the modeling of composites. Then, we will discuss the pros and cons of the emerging methods and inspiration for our research. This will help our group to have a deeper insight into the simulation of composites. If there is any work that has the potential to improve our multiscale analysis method of composites or data-driven constitutive method. We can either try to improve our method based on the new idea or seek collaboration with the researcher.

**I verify that I have read all the rules and regulations at** [**www.eng.purdue.edu/grad** u](http://www.eng.purdue.edu/grad)nder Professional Development.

Student’s signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_

**I verify that I have read this document and approve the student attending the conference as stipulated in the information found at** [**www.eng.purdue.edu/grad.**](http://www.eng.purdue.edu/grad)

Advisor’s signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_

Grad Chair’s signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_

\*IMPORTANT – attach copy of notification that paper has been accepted for an oral presentation at the conference