UVA

SCHOOL *of* ENGINEERING & APPLIED SCIENCE
Department of Mechanical and Aerospace Engineering
Rotating Machinery and Controls Laboratory

ROMAC NEWSLETTER

SPRING 2018

Houston Wood

From our Director

It is the time of year that we are preparing for conferences, graduations and the annual meeting. Many students will be presenting at conferences over the next few months, are continuing their research and we are all involved in the preparations for the ROMAC Annual Meeting to be held June 4—8 at the DoubleTree by Hilton Hotel Charlottesville. You can find more information about the meeting on the website at this link and the on-line registration form can be found here. There is more information on the next page. We hope many of you will be able to join us.

Besides research, studies and other responsibilities, our students worked together over spring break to breakdown and redesign two ROMAC lab spaces. Cubicle pieces were inventoried, a new design was developed which allowed for a higher student density, and more open work space. We now have 19 comfortable workspaces in one room facilitating both comradery and collaboration. Having all students and visiting scholars together in the same space allows us to have additional room for group meetings and a workspace for idea exchanges as well as students to hold office hours.

We will welcome Pedro Herrera to the ROMAC lab beginning with the summer semester. We said good bye to Brian Weaver at the end of March. He and his wife, Janelle are relocating to Olympia, WA, where Janelle will do her medical residency in family practice. Brian has been a part of ROMAC since 2009 as a student and most recently as a research associate, primarily working as our software engineer. Brian has made many significant contributions to the growth of ROMAC over the past few years and he will be missed by all.

The School of Engineering and Applied Science held it's annual Open House on Saturday, 4/7. For the first time in many years the ROMAC lab was open to the public and students shared their research and enthusiasm with our many visitors.

Thank you to all member companies who have already paid the 2018 member fee. It helps us plan and budget for the upcoming semesters.
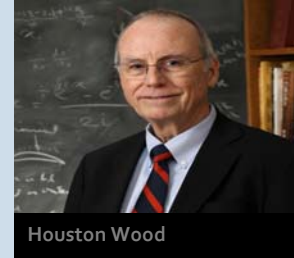

**ROMAC ANNUAL MEETING
JUNE 4-8, 2018
IN CHARLOTTESVILLE**

SPECIAL POINTS OF INTEREST

- **2018 ROMAC Annual Meeting**
- **2018 Summer Short Course**
- **ROMAC Advisory Board**
- **Visiting Scholar**
- **ROMAC Student Awards**
- **New Software Released**
- **Looking Ahead and a Blast from the Past**

Cori Watson defended her PhD Dissertation titled: Computational Modeling of Helical Groove Seals and will graduate in May 2018. She also received the 2018 MAE Outstanding Graduate Student Award.

2018 ROMAC Annual Meeting
June 4—8, 2018

This year the member only ROMAC Annual Meeting will take place at the DoubleTree by Hilton Hotel Charlottesville. The meeting will begin on Monday, June 4th with a welcome reception at 6 pm and conclude on Friday, June 8 at noon. The DoubleTree has provided a dedicated website for our meeting attendees to make hotel reservations directly through this link.

The meeting will consist of five technical sessions (Rotordynamics, Bearings, Seals and Optimization, Test Rigs, and Magnetic Bearings). Each session will include a number of technical presentations reporting on research activities conducted over the past year. In addition, there will be a number of technical presentations by member company representatives. If you have an interesting research topic that you'd like to present, please contact us as soon as possible at romac@virginia.edu to reserve a spot on the schedule.

On Tuesday evening, June 5th ROMAC will host a dinner in the Rotunda's Dome Room at the University of Virginia. The Rotunda was designed by the University's founder, Thomas Jefferson. It was designed to be the centerpiece of the Academical Village. Over the past three centuries there have been numerous and extensive renovations, the most recent restoration work was completed in 2016. Today, the newly renovated Rotunda, guided by Jefferson's original designs, is equipped with modern enhancements that will sustain UVA's crown jewel in its third century.

On line registration is available on the ROMAC Annual Meeting webpage at this link.

The Rotunda on a summer evening.

2018 Summer Short Course

This year the ROMAC Five-Day Rotordynamics and Magnetic Bearing Short Course will take place July 9—13, in the ROMAC Lab at the University of Virginia, School of Engineering and Applied Science, in Charlottesville VA. This course is open to both ROMAC members and non-members. A wide variety of topics are taught by industry experts, ROMAC faculty, researchers, and Ph.D. students.

Five-Day Short Course | July 9–13, 2018

$1,500 USD per ROMAC member |$3,000 USD Non-Member

Course material, parking, breaks and lunch is included.

Additional details and a registration form can be found here on the ROMAC website. If you have questions please contact Lori Mohr Pedersen.

ROMAC Advisory Board

The ROMAC Advisory Board (RAB) will meet in April and have a report at the Annual Meeting. You can find previous RAB meeting minutes here on the website. If you have questions, concerns or a topic you'd like to be addressed please email it to the ROMAC Advisory Board.

Visiting Scholar

Weiqi Bai is currently a PhD student in the State Key Laboratory of Rail Traffic Control and Safety at the Beijing Jiao-tong University. His research Interests include: Modeling and collaborative control of high-speed trains; Energy-saving optimal control; High-speed railway systems and Fault diagnosis. His appointment is through October 2018.

Award Winning ROMAC Students

Cori Watson received a **2018 Young Engineer Turbo Expo Travel Award** on behalf of the ASME Gas Turbine Segment. She will attend and present at the ASME Turbo Expo 2018 in Norway.

Xin Deng has been awarded the **Virginia Engineering Foundation Graduate Fellowship** effective Fall 2018 and the **ASME Turbo Expo Student Advisory Committee Travel Award**.

A look ahead and a glimpse at the Past

At the last ROMAC Annual Meeting, Beijing Institute of Technology invited us to hold our 2019 Annual Meeting in Beijing. This is an exciting opportunity for ROMAC with many logistics to be worked out. We are aware that some industry members may not be able to make the trip. We are looking at many options and we will share more specifics about this at our meeting in June.

This postcard from 1984 was found during the redesign of MEC 115

New Software Released

We are pleased to announce the release of RotorLab+ 4.2, the latest version of our primary software suite for rotordynamic and component-level analyses. This latest version includes the following new features and enhancements:

- Multi-level shaft capabilities are now available
- A new multi-level shaft Turbine Engine example project is now available
- Full bearing coefficients calculated by THPAD and MAXBRG tilting pad bearing analyses can now be directly linked into Damped Mode Shapes Analyses
- Shaft auto-meshing can now be toggled on/off
- Individual components in both Assembly and API models can now be quickly enabled and disabled via checkboxes
- Log dec vs. cross-coupled stiffness analysis and plots are now available in the Assembly Workspace Damped Mode Shapes Analysis
- Flexible support cross-talk has been added for Forstab Damped Mode Shapes Analyses
- Improvements to shaft model visualizations and new visualization options
- User manuals for all codes in RotorLab+ are now available via the Help Menu
- General improvements to overall program stability

This new package is available to ROMAC members for download on the ROMAC Software Catalog website.

Stay tuned for other releases planned for the coming months including RotorGUI 2.0 (featuring multiple code enhancements) and new codes for labyrinth seals, helical seals, and geared systems rotordynamics.
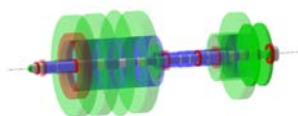
Figure 1.

RotorLab+ 4.2 multi-level turbine engine shaft model.

ROMAC Software Engineers

Cori Watson and Benny Schwartz have been recently appointed as ROMAC software engineers. Cori will focus on software administrative management and Benny will be your primary software technical contact. They can be reached by clicking on their names above, or at the email address on the next page.

ENGINEERING
Department of Mechanical and Aerospace Engineering
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Areas of Expertise and Current Research

- Software Development and Test Rig Validation

- Finite Element Analysis (FEA)

- Computational Fluid Dynamics (CFD)

- Fluid Film Bearings

- Rotordynamics

- Seals

- Squeeze Film Dampers

- Magnetic Bearings and Controls

- Optimization of Rotor-Bearing Systems

- Experimental, Computational, and Theoretical Studies

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