UVA

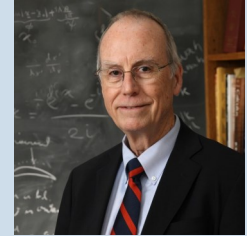**SCHOOL** *of* **ENGINEERING & APPLIED SCIENCE**

Department of Mechanical and Aerospace Engineering

Rotating Machinery and Controls Laboratory

Houston Wood

From our Director

This time last year we were all still basking in the glory of winning UVA's first NCAA Basketball Championship. That was then, this is now.

Life as we knew it in early March is no more. The Coronavirus, COVID-19 has changed our world. The ROMAC Lab has been following the guidelines issued by the University of Virginia. No one could have imagined a few short weeks ago that we would be working remotely, meeting through various technologies, not able to access our laboratories, social distancing and planning to bring our Annual Meeting on-line…one of many more firsts for us.

We have extended the pay on time discount due date for your 2020 membership fee to April 30, 2020.

Our undergraduate students have gone home and are finishing the semester with online classes. Our graduate students taking classes are doing the same, as well as working on their research safely from home. Faculty and staff are sheltering in their homes as well. Collaboration continues from afar and we are functioning with various degrees of distance between us. A challenge yes, because we enjoy meeting face to face, sitting across the table, sharing thoughts, ideas and suggestions, reviewing research, discussing problems and finding solutions.

Yet another first…Recently, Madeline Collins presented her master's thesis to her committee and colleagues through Zoom and passed!

We hope you and yours are well and remain so during these unprecedented times. Stay home, stay safe, and stay connected to ROMAC!

Houston Wood

Director, ROMAC Lab

2020 ROMAC ANNUAL MEETING
JUNE 8–12, 2020

The meeting will take place on line this year. Register here to receive the information on how to join us.

SPECIAL POINTS OF INTEREST

ROMAC 2020 GRADUATES

NEW RESEARCH SCIENTIST

VISITING SCHOLARS

2020 SUMMER EVENTS

ROMAC Annual Meeting On Line
June 8—12, 2020

Rotordynamics and Magnetic Bearings Short Course
July 9-13, 2020
On the Grounds of the University of Virginia
in the ROMAC Labs

We continue to work on our new website at
engineering.virignia.edu/romac

2020 Graduates

Syed Ali Asad Rizvi successfully defended his Ph.D. dissertation: *Reinforcement Learning for Model-Free Output Feedback Optimal Control.* Ali has gone on to industry with his Ph.D. in Electrical and Computing Engineering.

Madeline Collins successfully defended her Master's Thesis: *Validation and Uncertainty Quantification of CFD Smooth Seal Models: ANSYS and Bulk-Flow.* Madeline and her husband Nick will be moving to Georgia to further their careers.

New Research Scientist Position

Cori Watson-Kassa has completed her post-doc work as a research associate with ROMAC. We are pleased to announce that Cori will continue her research with ROMAC in her new position as a Research Scientist.

Summer 2020 ROMAC Events
Visit our website
for additional information

2020 On-Line ROMAC Annual Meeting
Talks will be available June 8—12, 2020

Register for the 2020 Annual Meeting

If you have questions please contact
Lori Mohr Pedersen

Rotordynamics and Magnetic Bearings Short Course
July 13 – 17, 2020

Register for the Short Course

This rotordynamics and magnetic bearings short course will include presentations by UVA faculty and graduate students. Case histories and examples from industry professionals will also be presented.

The short course takes place at the ROMAC Lab on the Grounds of UVA in Charlottesville, VA

$1,500 USD ROMAC Member

$3,000 USD Non-Member

Course material, parking, breaks and lunch is included.

If you have questions please contact
Lori Mohr Pedersen

2020 Recruitment Weekend

UVA Engineering held it's annual recruitment weekend February 20-22, 2020. All applicants had the opportunity to visit and learn about the research being conducting in the ROMAC Lab. Among them, three applicants specifically interested in joining the ROMAC lab to pursue their graduate degree met with faculty and students. We look to welcoming new students at the start of the fall 2020 semester. You'll meet them in the fall on the website and in the next newsletter.

Visiting Scholars

Qingfang Liu is an associate professor at Xi'an Jiaotong University in the School of Mathematics and Statistics. Her research interests include Computational Fluid Dynamics modeling and various methods of partial differential equations. Her appointment is through the end of August 2020.

Ke Zhifang (Linus Kirt) is a Ph.D. candidate from the Beijing Institute of Technology in Beijing, China. His research interests are: blade load characteristics of blade surface, the design of 3D cascade system towards stamped blade based on Bezier surface and research on the blade reverse method of stamped 3D cascade system. His visiting appointment is through mid-July 2021.

Spring 2020 Software update

RotorLab+ v4.4 – The next release of RotorLab+ is being tested. This latest version (v4.4) will contain the following updates…

♦ User interface updates for better clarity and ease of use

♦ Disks which extend beyond the end of the shaft are now allowed via virtual shaft elements

♦ Plotting improvements for mode tracking in Rotstb

♦ Various bug fixes for RotorLab+ interaction with Crtspd2, Rotstb and Forstb

♦ Bug fix for SQFDamp related to saving inputs.

RotorSol – RotorSol is in the process of being updated and tested for integration into RotorLab+. Progress and planned work is as follows:

♦ Interface programs have been written for RotorLab+ to communicate directly with RotorSol.

♦ An undamped mode shape analysis tool has been developed for RotorSol.

♦ The undamped and damped mode shape analysis features of RotorSol have been validated against existing RotorLab+, Crtspd2, and RotStb test cases. Further testing is in progress to validate the use of full bearing coefficients and more complex rotor systems.

♦ RotorSol will be included in the Analysis Tools functions of RotorLab+ as an additional option using the existing user inputs from the "Critical Speed Map" and "Damped Mode Shape" analysis tools.

♦ Direct integration testing of RotorSol with RotorLab+ is in progress.

Ongoing plans for future releases:

♦ SmoothSeal, Seal4, Laby4 are in validation testing for inclusion into upcoming RotorLab+ versions – scheduled for the summer of 2020.

For questions about RotorLab+ or any ROMAC software visit our website or contact us at romac@virginia.edu.

ENGINEERING
Department of Mechanical and Aerospace Engineering
Rotating Machinery and Controls Laboratory

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**

University of Virginia
ROMAC Laboratory and Consortium

Mechanical & Aerospace Engineering

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