Experimentally Speaking...

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MESSAGE FROM THE PRESIDENT

Wendy Crone, SEM President, 2018-2019

IN THIS Issue

Society for Experimental Mechanics, Inc.
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The IMAC XXXVII Conference is just around the corner! I look forward to seeing our colleagues in Orlando, Florida, January 28-31, 2019 and attending talks on the theme of Predictive Modeling for Engineering Design and Decision Making. The conference is shaping up to be another big success. In addition to more than 390 contributed presentations, we look forward to Keynote speaker Dr. Mary Baker. Dr. Baker is a UW-Madison alum with her Ph.D. from California Institute of Technology, and she is the President and CEO of ATA Engineering.

One of the benefits of being an SEM member is the opportunity to interact with our colleagues at conferences such as IMAC and Annual. The collection of technical expertise we have in key areas of mechanics is hard to match anywhere else. One of the ways the Society is working to continually rejuvenate and bring in new members is through events specifically designed for graduate students and young professionals, both at our two major conferences and in between.

Over the last several years we have been reviving and expanding the regional graduate student conferences in the Midwest, North East, North West, South East, and South West. These 1-2 day events draw students from campuses within the region and give them an opportunity to present their own research, hear about the research of others, and begin broadening their network of mechanics colleagues. Hosting of the conferences rotates between institutions in each region. Each is organized by local academic, national lab, and industry members who step up to do a bit of coordination to make an event happen. Funding support comes from the SEM Educational Foundation (SEMEF).

To learn more check out https://sem.org/semef or contact SEMEF Chair Peter Ifju (ifju@ufl.edu) for information about how to get involved in your region or start a new activity in a region we don't yet have up and running. It's a great opportunity for students to get experience presenting in a conference setting and they will be given a one-year free membership to SEM to encourage their participation in a future IMAC or Annual Conference.

The SEM Educational Foundation has been doing great work, but it also relies on donations from the members of SEM to continue and expand these activities. To donate just click on the DONATE button at the top right-hand corner of our https://sem.org/ homepage. Contributions to SEMEF up to a total of $10,000 will be matched.

I look forward to seeing you in Orlando in January or at the Annual conference in Reno, Nevada, June 3-6, 2019.

Wendy Crone
SEM President

FROM THE DIRECTORS

With this message, Nuno and I would like to take the opportunity to share with you a few 2018 highlights.

Nuno, as our new Managing Director, has taken the lead on day to day management of the staff and SEM collective business operations. I am spending more of my time taking a strategic look at SEM business and membership on the path toward sustainability. The SEM Officers recently met for our annual state of the business meeting, we took the time to work closely with staff, especially Nuno, to design and define strategic areas for management and growth over the next few years. If you have ideas that you would like to share in this regard, then please do. We remain a learning organization…open to your ideas and comments.

Our IMAC and Annual Conferences were both successes with strong technical programs and participation that enabled SEM to achieve its budget targets and end with a surplus. Our Executive Board, Councils, Committees and Technical Divisions (TDs) accomplished a great deal in 2018 and have put together strong programs for 2019.

We continue to be encouraged as we tap into the energy, not only within our group of veteran members, but amongst the rising number of new, young conference attendees and members. In 2019 we will be hosting special student and first time conference attendee mixers to help welcome new energy to our conferences and Society. We look forward to the growth of our new TDs and tracks in terms of conference participation, contribution of presentations and publication in our SEM journals.

Our three SEM Journals continue to grow in quality and ranking. EM is at its highest impact factor ever of 2.319 and JDBM is indexed in SCOPES. Special thanks go out to the Editor-in-Chief's, Ioannis Chasiotis (EM), Paul Reynolds (ET) and Eric Brown (JDBM) and to their editorial teams for the outstanding work that they do on behalf of SEM! Please see details per each journal on the Journals page of the newsletter.

We will be working to find easy yet innovative ways to enable our membership, specifically our TD members, to work together and communicate between conferences. Over the past year plus, the website that we were using was not able to manage technical programming needs and most importantly, the members and their needs. There was a huge lack of member data quality making it impossible for the SEM staff to manage needs and changes. We now have a new platform that should allow SEM to grow in many ways concerning communication with and amongst our conference attendees and membership. You will see different types of outreach efforts from SEM as we ramp up for IMAC and Annual 2019.

The membership aspect of the business will be a major focus over the next few years. We conducted a quick survey at the 2017 Annual Awards luncheon and learned a great deal regarding your preferences for communication from SEM, how you wish to communicate in between conferences, and why you attend SEM conferences. We will be conducting the same survey at the IMAC Awards luncheon in 2019. However, the goal is to collect current information from our collective membership spanning both our IMAC and Annual communities. Therefore, as you will see on the membership page of this newsletter, we have designed a very quick survey using survey monkey. Please click the hyperlink and answer the questions listed. The data collected will enable us to understand what is most important to you regarding your SEM membership…and most importantly, how we can add more value to your membership.

The technical programming, paper processing web platform is requiring our broad team of member/volunteers as well as the staff to continue to learn brand new approaches to collecting, programming and managing papers with our conference/session organizers. We continue to adjust processes to become more efficient and effective.

We are striving to create your 'go-to' website for all things regarding SEM and the experimental mechanics community. Therefore, your input is critical.

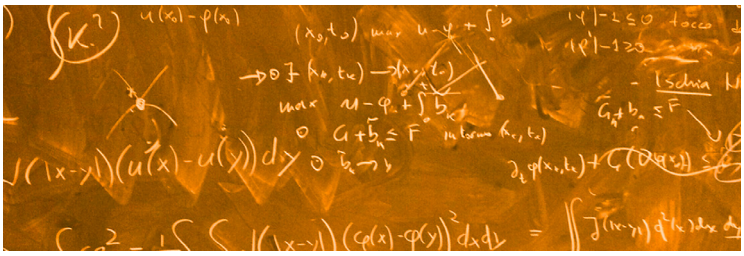
One more item that is exciting to share is the creation of the SEM strategic development fund (SDF). We have moved $200,000 from our operating funds into a managed account. The goal is to have this fund grow, at least moderately, to support our growing society and business. As our operating fund grows, we will move more into the SDF. The Finance Committee is currently looking into how best to apportion the funds for the best growth.

We always like to close with a special thank you to the SEM staff for their tireless work in putting together two outstanding conferences this year, for being there to answer the numerous emails from the conference attendees and members in preparation for the conferences, for going way above and beyond to learn the operational elements of the new web platforms, and for all of the other things that they do, day-in and day-out as a team to be sure SEM continues on its strong growth trajectory. The SEM staff is a key reason why we are referred to as the friendly society. We invite you to send an email to Jen, Shari, Joanna, Kathy and Sharon to acknowledge the work that they do on your behalf and on behalf of SEM. Thank You!!

We look forward to seeing many of you at IMAC and Annual 2019 and as always, invite your questions and comments, so please don't hesitate to email or call.

Kristin Zimmerman, Executive Director
Nuno Lopes, Managing Director

MEMBERSHIP



SEM EDUCATION FOUNDATION

Student symposia are a great way to get students involved, sharing ideas and furthering the Society's mission. A newly re-configured SEMEF page is now available with information on who to contact and how to submit proposals for symposia. These invaluable gatherings are supported by membership and donations, to donate, please go to sem.org/donations and select SEMEF. Thank you for your continued support of our future engineers.

MEMBER COMMUNICATIONS

It is the Society's goal to communicate clearly with members and to provide the community and services necessary to make you successful in all areas of experimental mechanics. To meet your needs, it is essential that your voice is heard. Please help us by taking a short survey that will allow the Society to better serve you. Go to https://surveyhero.com/c/e9ffcb88 and take this 3-4 minute survey. The link will also be available on our home page at sem.org.

MEMBER PROFILE UPDATE

Please update your Member profile in your SEM account to ensure General Data Protection Regulation compliance.

MEMBER NEWS

DAVID L. WILLIS

David L. Willis, age 87 of Greenfield passed away surrounded by his family on Friday, December 14, 2018 at Hancock Regional Hospital. He was born August 31, 1931 in Greenfield to the late John N. and Leone (Brooks) Willis.

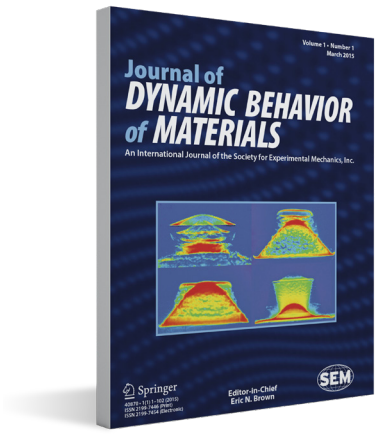
David was a graduate of Charlottesville High School. He married Jean (Crisman) on August 17, 1952. He received his bachelor's degree in engineering from Valparaiso University in 1953 and together they made their home and raised their family in Greenfield. Prior to his retirement in 1992, David enjoyed a 39-year career as an engineer for Allison Gas Turbine, Rolls Royce.

David served his industry and community well. He was a member of Bradley United Methodist Church, Greenfield Kiwanis, Hancock Regional Hospital Volunteer, Meals on Wheels of Hancock County, the Hospital Guild Board of Directors, Friends of the Hancock Public Library, Society for Experimental Mechanics and the Indianapolis Scientific & Engineering Foundation.

He is survived by his wife Jean of Greenfield; children, Charles (Emma) Willis of Springport, IN, Chris Willis of Perrysburg, OH, Mary (Greg) Clark of Lacrosse, WI, Deborah (Michael) Low of Greenfield; 13 grandchildren and 12 great grandchildren.

He is preceded in death by his parents; brothers Robert Willis, Joseph Willis and sister Anna Mae Walker.

DYNAMIC BEHAVIOR OF MATERIALS UPDATE



I am pleased to share that 2018 was another very successful year for the *Journal of Dynamic Behavior of Materials*. We published 43 outstanding papers, including a Special Issue on *Dynamic Failure of Composite Materials* Edited by James LeBlanc, Arun Shukla, Yapa D. S. Rajapakse of the Naval Undersea Warfare Center, University of Rhode Island, and Office of Naval Research respectively. All papers can be found at https://link.springer.com/journal/40870. They are free as a member benefit through the Society for Experimental Mechanics website (sem.org).

The *Journal of Dynamic Behavior of Materials* was selected for inclusion in the SCOPUS index starting in 2017 and received a CiteScore of 1.35 for our first year, placing the journal near the top quartile of materials science journals. A *Journal of Dynamic Behavior of Materials* paper by N. Heider, A. Steinbrenner, H. Aurich on *A Method for the Determination of the Viscoelastic Relaxation Modules of PBX by Confined SHPB Measurements* was highlighted by Springer-Nature as one of their Top 10 Downloaded Journal Articles in the field of Materials Science. We continue to be highly international with manuscripts published with authors from Australia, Canada, Japan, Finland, France, Germany, India, Italy, Malaysia, Morocco, Sweden, United Kingdom, and the United States of America. Thanks to robust submissions of high-quality papers we are continuing to publish full outstanding issues while maintaining our ability to offer timely reviews and prompt publication. As part of the *Society for Experimental Mechanics* celebrating our 75th Anniversary in 2018, the first issue featured an article *Celebrating 75 Years of the Society for Experimental Mechanics and the Study of Dynamic Behavior of Materials* and each issue of *JDBM* featured a different image on the cover from past SEM publications in the field.

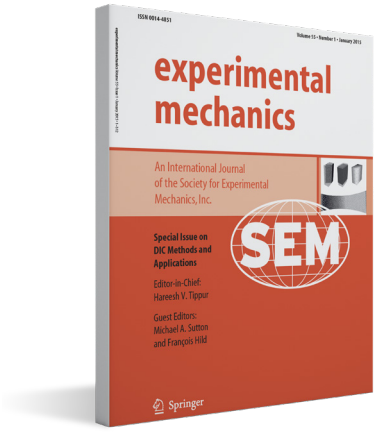
The journal publishes experimental and theoretical studies of metals, polymers, glasses, composites, granular materials, explosives, biological materials, geological materials, phase transitions, and structural response. The journal includes application and development of techniques including split Hopkinson pressure bar, Kolsky bar, plate impact with light gas guns and powder guns, Taylor anvil, spectroscopy- and pyrometry-based shock temperature measurements, optical and x-ray imaging methods, interferometry and velocimetry techniques, dynamic fracture, laser based dynamic drivers, penetration and ballistics, and Equation of State and Spall Failure.

Thank you to everyone who continue to make of the *Journal of Dynamic Behavior of Materials* a success including the authors without whom the journal would not have been possible, the Associate Technical Editors: Nadia Bahlouli, Nicola Bonora, Neil K. Bourne, Daniel T. Casem, Ellen K. Cerreta, Trevor Cloete, Kathryn A. Dannemann, Veronica Eliasson,, Pascal Forquin, Mikko Hokka, Jennifer L. Jordan, Leslie Lamberson, Yulong Li, Jeffrey Nguyen, Bo Song, Parameswaran Venkitanarayanan, Tracy Vogler, and Takashi Yokoyama, the Advisory Board members: Arun Shukla (Chair), Dana M. Dattelbaum, William L. Fourney, Yogendra Gupta, K. T. Ramesh, Naresh Thadhani, and Hareesh Tippur, and SEM Staff particularly Nuno Lopes.

I look forward to 2019 bringing many new advances in the field of dynamic behavior of materials and exciting work published in the *Journal of Dynamic Behavior of Materials*! Please submit your work in the field to https://www.editorialmanager.com/jdbm/default.aspx.

Eric Brown,
Editor in Chief, Journal of Dynamic Behavior of Materials

EXPERIMENTAL MECHANICS UPDATE



In 2018, *Experimental Mechanics* published 106 original papers in nine issues, two of which were Special Issues. The first Special Issue was co-edited by Professors Shuman Xia, Pradeep Guduru and Henry Sodano with title *Mechanics of Energy Materials*, and the second Special Issue was co-edited by Professor Michael Sutton and Drs. Phillip Reu and Daniel Turner with the title *Advances in Digital Image Correlation: Extreme-scale Applications, Algorithms, and Uncertainty Quantification*. The remaining seven issues of EM contained novel works, among others, on Digital Image (DIC) and Digital Volume Correlation (DVC), micro-computed tomography, mechanics of 3D printed materials, thermomechanics, high strain rates experiments, and optical, electron and probe microscopy based experimental methods for the study of a broad range of engineering and novel materials. All papers are available online at http://link.springer.com/journal/volumesAndIssues/11340.

In 2018, the impact factor of *Experimental Mechanics* reached a new high of 2.319, thanks to the efforts of our Editorial Board and the quality of papers submitted by all authors. The Editorial and International Boards of Experimental Mechanics invite all SEM members to submit your outstanding research to *Experimental Mechanics* and help further propel the reputation of our Society and continue the lasting contributions of *Experimental Mechanics* in the last 58 years.

I would like to thank everyone who contributed to the success of *Experimental Mechanics* in 2018, including the authors and reviewers, the Technical Editors Antonio Baldi, Janice Barton, Vijay Chalivendra, Weinong Chen, Samantha Daly, Adrian DeWald, Christian Franck, Michel Grédiac, Louis Hector, Francois Hild, Jamie Kimberley, Francesco Lanza di Scalea, Hongbing Lu, Michael Mello, Jonathan Reichner, Paul Reynolds, John Shaw, Raman Singh, Clive Siviour, Junlan Wang, Huimin Xie, Satoru Yoneyama, Alan Zehnder, Yong Zhu, EM's Managing Editors Nuno Lopes and Joanna Schneider, and Diane Jeffers for her support with the logistics of the journal.

I look forward to a yet more productive and successful year 2019!

Ioannis Chasiotis
Editor-in-chief, Experimental Mechanics

2019 SEM EXECUTIVE BOARD NOMINEES

The SEM Nominating Committee has announced the following updates for the 2019–2020 SEM Executive Board. Biographies for each member appear in this article. Once elected, these members will join current Board members whose terms extend to 2020.


John Lambros


Daniel Rixen


Eric N. Brown


Javad Baqersad


Samantha Daly


James P. De Clerck


Jeffrey D. Helm

PRESIDENT

JOHN LAMBROS

Prof. Lambros received a B.Eng. degree in Aeronautical Engineering from the Imperial College of Science and Technology of the University of London in 1988, an M.S. degree in Aeronautics from Caltech in 1989, and a Ph.D. degree also in Aeronautics from Caltech in 1994. After a year as a postdoctoral researcher, he joined the Mechanical Engineering department of the University of Delaware as an Assistant Professor in 1995 and moved to the Aerospace Engineering department of the University of Illinois in 2000, where he is currently a Professor. He is a Fellow of the American Society of Mechanical Engineers, the Society for Experimental Mechanics, and the American Academy of Mechanics. He has served as an Associate Editor for *Experimental Mechanics* (1999-2005) and the *ASME Journal of Applied Mechanics* (2011-2014). He has also served on the Executive Board of the SEM (2008-2010) and recently completed one term as Associated Head for Graduate Studies in the Aerospace Engineering Department at Illinois (2011-2016). Over his 20-year career he has received numerous honors and awards for both research and teaching achievements including an NSF CAREER Award (1999), the SEM Hetényi (2012) and Frocht (2015) Awards, and the UIUC Campus Award for Excellence in Graduate and Professional Teaching (2015).

PRESIDENT-ELECT

DANIEL RIXEN

Daniel Rixen, born in 1967, received his engineering degree in Electromechanics and doctoral degree in Applied Sciences from the University of Liège (Belgium), at the Laboratoire de Techniques Aéronautiques et Spatiales (LTAS). He also holds a master degree in Aerospace Vehicle Design from the College of Aeronautics in Cranfield (UK). After a post-doctoral stay at the University of Colorado (Center for Aerospace Structures), he was appointed in 2000 professor and chair of Engineering Dynamics at the Delft University of Technology (The Netherlands). Since 2012, he leads the chair of Applied Mechanics at the Technical University of Munich (Germany).

His research focuses on the dynamics of mechanical systems and covers the fields of numerical methods, experimental techniques, multiphysics and mechatronics. A significant part of his research involves partitioning problems in order to apply parallel computing, model reduction techniques or experimental substructuring. He regularly collaborates with industry to apply theoretical developments to real-life applications (automotive, aerospace, wind energy, ...). Since 2012, his research field also includes robotics and humanoids.

VICE-PRESIDENT

ERIC N. BROWN

Dr. Eric N. Brown is the Division Leader for the Explosive Science and Shock Physics Division at Los Alamos National Laboratory where he oversees the premier research program on energetic materials and dynamic material response in support of National Security. His research has spanned fracture and damage of complex heterogeneous polymers and polymer composites for energetic, reactive, and structural applications including crystalline phase transitions, plasticity, dynamic loading conditions, and self-healing materials. He is the founding Editor-in-Chief of the *Journal of Dynamic Behavior of Materials* and been named Fellow of the Society for Experimental Mechanics. He has received awards for his technical achievements in solid mechanics and materials science from the ASC, DOE-NNSA, LANL, MRS, SEM, TMS and the University of Illinois. He has served on several committees in SEM including Board of Directors as Member-at-Large, Research Committee, Technical Activities Council, Biological Systems and Materials Technical Division, and SEMEF. He has organized and chaired sessions for the Dynamic Behavior of Materials, Composites, and Biological Systems, and Materials Technical Divisions. He served three terms as an Associate Technical Editor of *Experimental Mechanics*. Eric was a Director's Postdoctoral Fellow and Technical Staff Member in the Materials Science and Technology Division at Los Alamos National Laboratory, Technical Advisor for the Joint DoD/DOE Munitions Technology Program in the

Office of the Under Secretary of Defense, and managed the Neutron Science and Technology Group in the Los Alamos National Laboratory Physics Division. Eric received a B.S. in Mechanical Engineering in 1998 and a Ph.D. in Theoretical and Applied Mechanics in 2003, both from the University of Illinois at Urbana-Champaign.

MEMBERS-AT-LARGE

JAVAD BAQERSAD

Dr. Javad Baqersad is the director of Noise, Vibration, Harshness, and Experimental Mechanics Laboratory (NVHEM Lab) at Kettering University. He received his Ph.D. in Mechanical Engineering from the University of Massachusetts Lowell in 2015. He also holds Master of Science degrees in Mechanical Engineering and Automotive Engineering. His research interests and expertise are related to vibration and acoustics, tire and vehicle dynamics, finite element analysis, lightweight materials, digital image correlation, and signal processing. He has several years of industry and academic experience. At NVHEM, he works on both federally-funded and industry-funded projects and has published more than 60 journal articles and conference papers contributing to the literature. His work has received recognition from the scientific community. He was also honored for his academic and professional achievements with the 2014 Outstanding Graduate Student of the Year Award from the Mechanical Engineering Department at UMass Lowell and with the 2015 DJ DeMichele Scholarship Award from the Society for Experimental Mechanics. Furthermore, Kettering University named him the 2017 Outstanding New Researcher. He has been an active member of SEM since 2012. He has chaired several technical sessions, currently chairs a focus group in optical techniques, organizes optical sessions, and is an associate technical editor for *Experimental Techniques*.

SAMANTHA DALY

Samantha (Sam) Daly is an Associate Professor in the Department of Mechanical Engineering at the University of California at Santa Barbara. She received her Ph.D. from Caltech in 2007 and subsequently joined the University of Michigan, where she was on the faculty until 2016 prior to her move to UCSB. Her interests lie at the intersection of experimental mechanics and materials science, with an emphasis on using novel methods of experimentation coupled closely with theoretical and computational modeling. Group research focuses on the statistical quantification of microstructural features of materials and their effect on meso- and macro-scale properties. Currently, the group is engaged in the development of novel methods of multi-scale material characterization and large data analyses, with application to structural metallic alloys, active materials, advanced composites, very high cycle and low cycle fatigue mechanisms, plasticity, fracture, and material behavior at the microscale. Her recognitions include the NSF CAREER Award, the ASME Eshelby Mechanics Award, the Journal of Strain Analysis Young Investigator Award, the *Experimental Mechanics* Best Paper of the Year Award, the *IJSS* Best Paper of the Year Award, the DOE Early Career Award, the AFOSR-YIP Award, the ASME Orr Award, and the Caddell Award.

JAMES P. DE CLERCK

Dr. James De Clerck is a Professor of Practice in the Mechanical Engineering – Engineering Mechanics Department at Michigan Technological University. He earned BS, MS and PhD degrees from Michigan Tech, receiving his Ph.D. in Engineering Mechanics in 1991.

Prior to joining the Michigan Tech faculty in 2009, Jim was a Project Design Engineer at the General Motors Noise and Vibration Center where he worked on improving vehicle noise and vibration performance at every stage of the vehicle development process. Jim led the development and implementation of new vibration analysis and testing technology. He also developed techniques for establishing design performance requirements and for validating analytical model predictions.

In addition to advising the Michigan Tech Formula SAE Team, Jim teaches classes on Model Based Design, Dynamics, System Dynamics Senior Capstone Design, Analytical and Experimental Modal Analysis, Machine Design, and Analytical Vibro-Acoustics classes. Jim's areas of expertise include noise and vibration, structural dynamics, design, modal analysis, model validation, inverse methods applied to design, and advanced measurement techniques.

JEFFREY D. HELM

Jeffrey D. Helm received his Ph.D. in Mechanical Engineering from the University of South Carolina in 1999 and was one of the founding members of Correlated Solutions Inc. He is currently an associate professor in the Mechanical Engineering Department at Lafayette College. Dr. Helm served as chair of the Education Committee, is a member of SEMEF, was the editor-in-chief of *Experimental Techniques* and continues on as an associate editor for the journal. Dr. Helm's interests include the application and development of the digital image correlation method. His current work centers on civil applications including pile/soil movement and assessing the bioremediation of sandy soils.

UPCOMING EVENTS

2019

IMAC-XXXVII IT'S NOT JUST MODAL ANYMORE

JANUARY 28-31, 2019
ROSEN PLAZA HOTEL
Orlando, FL USA

PRE-CONFERENCE COURSES
Sunday, January 27, 2019

Bayesian Model Updating and Uncertainty Quantification: Theory, Computational Tools, and Applications
9:00AM - 5:00PM
Prof. Costas Papadimitriou—University of Thessaly
Prof. Babak Moaveni—Tufts University

2019 SEM ANNUAL

JUNE 3-6, 2019
PEPPERMILL RESORT
Reno, NV USA

IDICS 2019

OCTOBER 14–17, 2019
DOUBLETREE BY HILTON
Portland, Oregon

2020

IMAC-XXXVIII

FEBRUARY 10–13, 2020
HYATT REGENCY HOUSTON
Houston, TX USA

XIV SEM INTERNATIONAL CONGRESS

JUNE 7-11, 2020
ROSEN PLAZA HOTEL
Orlando, FL USA

To explore these events and others SEM and its partners are planning, please go to sem.org for more information.