

Curriculum Vita
MOHAMMAD MODARRES
 Department of Mechanical Engineering
 A.J. Clark School of Engineering
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1. EDUCATION

- Ph.D. Nuclear Engineering, Massachusetts Institute of Technology, 1980
 Dissertation: *Reliability analysis of complex technical systems using the fault tree modularization technique*. Advisor: Norman C. Rasmussen
- M.S. Mechanical Engineering, Massachusetts Institute of Technology, 1977
- B.S. Mechanical Engineering, Tehran Polytechnic Institute, 1975

2. EXPERIENCE

Expertise

Probabilistic Risk Assessment, Uncertainty Analysis, Probabilistic Physics-of-Failure, Probabilistic Fracture Mechanics, Prognosis and Health Management

University of Maryland

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|----------------|--|
| 2014 – 2025 | Director, Center for Risk and Reliability (CRR) |
| 2014 - Present | Nicole J. Kim Eminent Chair in Engineering |
| 1992 - Present | Professor of Nuclear Engineering |
| 2012 - 2014 | Minta Martin Endowed Chair in Engineering |
| 1991 - 2019 | Professor and Director, Reliability Engineering Program |
| 2007 - 2010 | Leader, Div. of Design and Reliability of Systems, Dept. of Mechanical Engineering |
| 2001 - 2008 | Director, Graduate Program in Nuclear Engineering |
| 1996 - 2004 | Founding Director, Center for Technology Risk Studies (CTRS) |
| 1985 - 2004 | Founding Director, Center for Reliability Engineering (CRE) |
| 1986 - 1992 | Associate Professor of Nuclear Engineering |
| 1982 - 1986 | Assistant Professor of Nuclear Engineering |

Other

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|-----------------|--|
| 1/1992 - 7/1992 | Sabbatical Leave, Visiting Professor, U.S. Nuclear Regulatory Commission (NRC). Advancing NRC's initiative on risk-informed regulation. |
| 1980 – 1982 | Risk and Nuclear Safety Analyst, Science Applications International Corporation. Involved in the development of two post-TMI NRC-sponsored PRAs. |

3. PROFESSIONAL, EDITORIAL AND CONSULTING

Professional & Scholarly Activities

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| July 2013 – July 2021 | Senior experts, IAEA Multi-Unit Risk Methodology Development |
| January 2013 - Dec. 2017 | Member, External Review Board, Extremely Low Probability of Rupture (xLPR), NRC/EPRI/Sandia National Labs. |

July 2012 - July 2013	Member, Committee for a Study of Pipeline Transportation of Diluted Bitumen, National Academy of Sciences
August 1992 - January 1993	Visiting Professor, Cooperative Research, Commission of European Communities Joint Research Center, Ispra, Italy
February 1990 - October 1997	Member NRC Expert Review team for BWR MARK-I Liner Melt-through issue (NUREG/CR-5423 & NUREG/CR-6109) and Direct Containment Heating (NUREG/CR-6075, and NUREG/CR-6109)
March 1983 - August 1983	Member, Advisory Committee on Risk Methodology Integration and Evaluation Program, NRC
January 1983 - July 1985	Chair, Technical Integration Group-DOE Information Systems Analysis
January 1983 - June 1984	Member, Peer Review Group on Pressurized Thermal Shock, NRC
October 1982 - July 1983	Member, Seabrook Nuclear Plant PRA Review Board, PLG, Inc.
July 1982 - November 1983	Training Program Instructor, Probabilistic Risk Assessment, NRC
September 1982 - January 1983	Member, Ad-Hoc Committee on Nuclear Regulatory Research, NRC
December 1981 - June 1982	Member, Writing Group for the "PRA Procedures Guide" (NUREG/CR-2300), NRC
Editorial	
January 2025 – Present	Executive Guest Editor, Nuclear Engineering and Design Journal.
June 2017 - Present	Editorial Board, Journal of Integrated Security and Safety Science
January 2010 - Present	Editorial Board, Reliability Engineering and System Safety Journal
April 2005 - Present	Editorial Board, Journal of Risk and Reliability
January 2005 - Present	Editorial Board, International Journal on Performability Engineering
December 2004 - Present	Editorial Board, International Journal of Reliability and Safety (IJRS)
June 2001- May 2019	Editorial Board, Nuclear Technology Journal
January 2010 - May 2013	Associate Editor, International J. of Quality, Statistics, and Reliability
January 1993 - April 1998	Guest Editor, Reliability Engineering and System Safety (RESS) Journal
Consulting	
July 2021 – January 2024	Major Pharmaceutical Company, Advisor for company's various reliability programs to assess medical devices.
July 2019 – July 2021	Canadian Nuclear Safety Commission (CNSC), Summarizing best practices in Probabilistic Fracture Mechanics (PFM).
December 2016 – October 2019	International Atomic Energy Agency, Vienna, Austria, Development of guidelines for multi-unit probabilistic safety assessment of nuclear plants.
November 2014 - January 2017	DOE, Office of Nuclear Safety, Assessment of conservatisms in traditional accident analysis techniques used in DOE facilities.
August 2010 - November 2015	Oak Ridge National Laboratory, Reactor vessel flaw characterization, detection and sizing uncertainties; Also, member of the external review board on xLPR code development.
August 2010 - May 2014	Wyle Laboratories, Accelerated Life Testing training and short courses offered to more than ten defense organizations.
April 2010 - August 2013	Gensler Corp., Nuclear safety and feasibility of the master plan for the King Abdullah City for Atomic and Renewable Energy, Saudi Arabia.
August 2010 - January 2011	Advisory Committee on Reactor Safeguards (NRC/ACRS), Comparing Integrated Safety Assessment and PRA methods in nuclear fuel facilities.
October 2009 - February 2010	Aurora, Corp., Reliability of long-life unmanned aircraft.
October 2007 – December 2017	NuScale Power, Development of the first probabilistic risk assessment for NRC design certification. Also, development of the probabilistic

	physics-based assessment of the steam generator tube rupture frequency. Advisor to the PRA team.
May 1997 - August 2009	ISL, Inc., Review of the PRAs for AP600 and AP1000 reactors for the NRC. PRA development of the DOE's New Production Reactor, Savannah, GA
January 2007 - May 2007	International Access Corp., Assess fire protection systems and regulations of the U.S. and European nuclear power for adoption in Japan.
December 2006 - March 2007	Fuelcor, LLC, Feasibility of a thorium-based Fuel Cycle.
October 2006 - December 2006	Thermo King Corp., Accelerated Life Testing Training.
October 2003 - December 2004	GCAS Inc., Reliability of embedded sensors in smart military uniforms.
October 2003 - December 2003	ITT Industries, Review of AST-FAA Training Practices.
May 2001 - January 2002	Westar Corporation, U.S. Army helicopter fleet risk and reliability.
April 1999 - May 2004	Motorola Inc., Knowledge-Management (KM) modeling of complex organization systems and automation.
February 1999 - December 1999	Teradyne, Inc., Reliability and root-cause failure analysis developments.
September 1995 - December 1998	Pacific Northwest Laboratories, Battelle Memorial Institute, Fire risk and safety reviews of the Soviet-Designed nuclear power plants.
December 1994 - August 1995	Public Services Electric & Gas (PSE&G), Root-cause failure analysis.
February 1993 - January 2001	Energy Research Inc., Reviewer of the Individual Plant Examination External Events (IPEEE) for the U.S. NRC.
August 1990 - August 1991	Taiwan Atomic Energy Council, and Taiwan Power Company. Nuclear safety and PRA advisor.
March 1990 - October 1990	BDM Corporation. Reliability study of the Space Station Freedom Electric Power System.
September 1988 - February 1997	Sciencetech Inc. (later ISL, Inc.). Development of the Individual Plant Examination (IPE) guideline and NUREG report for the NRC.
January 1988 - January 1992	Brookhaven National Laboratory, Review the U.S. NRC's Individual Plant Examination (IPE) plan.
January 1985 - February 1988	Technology Research Corporation (TRC), Rockville, Maryland. Deliver reliability and maintainability courses for the NRC.

4. UNIVERSITY-RELATED CONTRACTS & GRANTS

Served as the PI and Co-PI for over \$20,000,000 of cumulative research grants and contracts through the University of Maryland related to over 100 different basic or research projects since joining the University.

5. HONORS AND AWARDS

Honorary Doctorate Degree in Engineering, Da Vinci University, Guatemala
 Nicole Y. Kim Eminent Professorship in Engineering
 Minta Martin Professorship in A.J. Clark School of Engineering
 University of Maryland Distinguished Scholar-Teacher
 2019 Tommy Thompson Award for outstanding lifetime contributions to nuclear safety, American Nuclear Society
 Life Fellow, Institute of Electrical and Electronics Engineers (IEEE)
 Fellow, American Nuclear Society
 Fellow, Asia-Pacific Artificial Intelligence Association (AAIA)
 1996 Maryland Inventor of the Year Award (in Information Sciences: Intelligent Nuclear Plant Operator Advisory

System Development)

FDA Commissioner Special Citation for Contributions to Risk Assessment Methods, 2004

International Leadership Research Award, SREQM, 2007

Best Paper Award, ICONE, 1999, 2007

Best Paper Award, Local ANS Chapter, 2007

Best Paper Award, Local DCCEAS Paper Competition in the National Capital Region, 2007

Best Paper Award, Local ANS Chapter, 2011

Best Paper Award, Local DCCEAS Paper Competition in the National Capital Region, 2011

Best Paper Award, American Nuclear Society, PSA'13, September 2013

Thomas Fagan Best Paper Award, RAMS Conference, 2017

6. **ACADEMIC CONTRIBUTIONS**

Curricula Developed

- 1) Interdisciplinary M.S. and Ph.D. graduate program in *Reliability Engineering* in 1985 (along with Prof. Marvin Roush). Now the leading M.S. and Ph.D. program in Reliability Engineering with over 400 alumni.
- 2) The undergraduate minor program in *Nuclear Engineering* started in Fall 2008, currently offered under the Department of Mechanical Engineering, UMD.

7. **PUBLICATIONS**

Textbooks

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| B.6 | <i>Probability Distributions Used in Reliability Engineering</i> , A. O'Connor, M. Modarres, A. Mosleh, Center for Risk and Reliability Press, ISBN 978-0-9966468-1-9 (2019) |
| B.5 | <i>Reliability Engineering and Risk Analysis: A Practical Guide</i> , M. Modarres, M. Kaminskiy, and V. Krivtsov, CRC Press, New York, N.Y., 1 st Ed. (1999), 2 nd Ed. (2010), 3 rd Ed. (2017). |
| B.4 | <i>Probabilistic Physics of Failure Approach to Reliability: Modeling, Accelerated Testing, Prognosis and Reliability Assessment</i> , M. Modarres, A. Amiri, and C. Jackson, Scrivener-Wiley (2017). 2 nd Edition in Manuscript (2025). |
| B.3 | <i>Risk Analysis in Engineering: Probabilistic Techniques, Tools and Trends</i> , M. Modarres, CRC Press, 2006. |
| B.2 | <i>Commercial Nuclear Power: Assuring Safety for the Future</i> , C. Ramsey and M. Modarres, John Wiley & Sons, New York, N.Y., 1998. |
| B.1 | <i>Reliability and Risk Analysis</i> , M. Modarres, 1 st Edition Published by Marcel Dekker, New York, N.Y., 1993, 2 nd Edition with K. Groth as co-author CRC Press, New York (2023). |

Book Chapters

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| BC.13 | Probabilistic Physics of Failure, in <i>Advances in Performability Engineering</i> , Prof. Krishna Misra (Ed.), (2021), ISBN 978-3-030-55732-4. |
| BC.12 | Probabilistic Risk Assessment, <i>Encyclopedia of Nuclear Energy</i> , Professor Ehud Greenspan & Dr. Joy Rempe (Eds.), Elsevier, 2021, ISBN: 9780128197257. |
| BC.11 | Probabilistic Risk Assessment, <i>Wiley Encyclopedia of Electrical and Electronics Engineering</i> , John Wiley & Sons, 2018. |
| BC.10 | Small Crack Fatigue Growth and Detection Modeling with Uncertainty Analysis and Acoustic Emission Application, in <i>Time Series Analysis and Forecasting: Selected Contributions</i> from the ITISE Conference, Editors: Rojas, Ignacio, Pomares, Héctor (Eds.), 2017. |

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- BC.9 Methods of Deterministic and Probabilistic Safety Analysis, M. Modarres, I.S. Kim, in *Handbook of Nuclear Engineering*, Dan G. Cacuci, (Ed.), Springer, London (2010), ISBN 978-0-387-98149-9.
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- BC.8 Examples and Applications of Probabilistic Risk Assessment, M. Modarres and M. Azarkhail, *Encyclopedia of Quantitative Risk Assessment*, Brian Everitt & Ed Melnick (Eds.), Wiley and Sons (Nov. 2008).
-
- BC.7 Probabilistic Risk Assessment, M. Modarres, *Encyclopedia of Quantitative Risk Analysis and Assessment*, Wiley and Sons (2008).
-
- BC.6 Probabilistic Risk Assessment, M. Modarres, *Handbook of Performability Engineering*, Krishna Misra, Ed., Springer London, (2008).
-
- BC.5 Interdisciplinary Approach to Developing a Probabilistic Risk Analysis Model: Applications to a Beef Slaughterhouse T. Roberts, C. Narrod, S. Malcolm, and M. Modarres, in *Interdisciplinary Food Safety Research* (N. H. Hooker and E. A. Murano, eds.), CRC Press, FL, 2000
-
- BC.4 Reliability Engineering, M. Modarres, and F. Joglar, in *SPFE Handbook of Fire Protection*, Society of Fire Protection Engineers, Third Edition, 2001.
-
- BC.3 Logic-Based Hierarchies for Modeling Behaviors of Complex Dynamic Systems with Applications, Y-S. Hu and M. Modarres, *Fuzzy Systems and Soft Computing in Nuclear Eng.*, Da Ruan Ed., Springer-Verlage, 1999.
-
- BC.2 Probabilistic Risk Assessment, M. Modarres, Chapter in *Wiley Encyclopedia of Electrical and Electronics Engineering*, John Wiley & Sons, 1999.
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- BC.1 Reliability Engineering, M. Modarres and H-Y. Hu, in *SPFE Handbook of Fire Protection*, Society of Fire Protection Engineers, Second Edition, 1995.
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Conference and Workshop Proceeding Editor

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- BP.11 *Proceedings of the International Workshop on Software Systems (WRTP2004/IWSS2004)*, M. Modarres (Editor), International Federation of Automatic Control (IFAC), Center for Technology Risk Studies, 2004
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- BP.10 *Proceedings of the 2nd Workshop on Uses of Risk-Information by Federal Agencies*, Center for Technology Risk Studies, College Park, MD, December 2003.
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- BP.9 *Proceedings of the Fifth Functional Modeling Workshop*, Center for Reliability Engineering, College Park, MD July 2003.
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- BP. 8 *Proceedings of the Workshop on Uses of Risk-Information by Federal Agencies*, Center for Technology Risk Studies, College Park, MD, September 2001.
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- BP.7 *Proceedings of the International Meeting on Probabilistic Safety Assessment (PSA '99)*, American Nuclear Society, Washington, D.C., (Vols. I & II), ISBN 0-89448-640-3,1999.
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- BE.6 *Proceedings of the Fifth Functional Modeling Workshop*, M. Modarres, Center for Reliability Engineering, College Park, MD, 1998.
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- BE.5 *Proceedings of the Fourth Functional Modeling Workshop*, M. Modarres, Center for Reliability Engineering, College Park, MD, ISBN 0-9652669-3-1, 1997.
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- BE.4 *Proceedings of the Third Functional Modeling Workshop*, M. Modarres and M. Lind, Center for Reliability Engineering; College Park, MD, ISBN 0-9652669-2-3, 1996.
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- BE.3 *Proceedings of the Second Functional Modeling Workshop*, M. Lind, and M. Modarres, Technical University of Denmark, Institute for Automation, 1998.
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- BE.2 *Proceedings of the First Functional Modeling Workshop*, M. Modarres and A. Poucet, Center for Reliability Engineering, College Park, MD, ISBN 0-9652669-0-7, 1996.
-
- BE.1 *Proceedings of the Topical Meeting on Computer-Based Human Support Systems: Technology, Methods and Future*, M. Modarres and A. Poucet, ANS, La Grange Part, IL, ISBN: 0-89448-197-5, 1995.
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Guest Editor

- GE.3 *Entropy Journal*, Special Issue on: Entropy for Characterization of Uncertainty in Risk and Reliability, 2017.

GE.2 *Reliability Engineering and System Safety J., Special Issue on Functional Modeling Application to Complex Engineering Systems*, M. Modarres, ed., Vol. 64, No. 2 May 1999).

GE.1 *Reliability Engineering & System Safety J., Special Issue on Advanced Computer Applications in Safety, Reliability Assessment and Management*, A. Poucet, M. Modarres, and P. Kafka, eds., Vol. 44, No. 3, 1994.

Archival Journals (Peer Reviewed)

----- [2025] -----

J. 120 Complex System Diagnostics Using a Knowledge Graph-Informed and Large Language Model-Enhanced Framework, S. Marandi, Y-S Hu, M. Modarres, *Applied Sciences*, 2025, 15, 9428, <https://doi.org/10.3390/app15179428>

J. 119 Enhancing Safety and Operation of Hydrogen Fueling Stations: A Model-based Method for Complex Failure Scenario Analysis, R. Li, J. Wu, S. Mosleh, K. Groth, M. Modarres, M. Lind, O. Ravn, X. Zhang, *Process Safety and Environmental Protection Journal*, Volume 201, Part B, September 2025, 107533, <https://doi.org/10.1016/j.psep.2025.107533>

J.118 A Monte Carlo Augmented Bayesian Network Approach for External Flood PRAs, *Nuclear Engineering and Design*, Accepted for Publication, J. Shen, M. Bensi, M. Modarres, Volume 433, March 2025, 113840, <https://doi.org/10.1016/j.nucengdes.2025.113840>.

----- [2024] -----

J.117 A Critical Review and Benchmark Study of Dependency Modeling for Seismic Probabilistic Risk Assessment in the Nuclear Power Industry, T. Zhou, L. Zhang, J. Hu, M. Modarres, E. Droguett, *Reliability Engineering and System Safety*, 25 (2024), <https://doi.org/10.1016/j.ress.2024.110009>.

J.116 Probabilistic Physics of Failure Concept and Its Application in Reliability Engineering, M. Modarres, *IEEE Transaction on Reliability*, 73 (1): 19-20 (March 2024), [10.1109/TR.2024.3357811](https://doi.org/10.1109/TR.2024.3357811).

----- [2023] -----

J.115 Predicting System Degradation with a Guided Neural Network Approach, H. Habibollahi, J. Herrmann, M. Modarres, *Sustainability J.* 23, 6346, (2023) <https://doi.org/10.3390/s23146346>

J.114 Measuring and Indexing the Durability of Electrical and Electronic Equipment, H. Habibollahi, J. Herrmann, M. Modarres, *Sensors J.*, 15, 14386, (2023) <https://doi.org/10.3390/su151914386>

J.113 Multi-Unit Seismic Probabilistic Risk Assessment: A Bayesian Network Perspective, J. DeJesus, M. Bensi, M. Modarres, *Reliability Engineering and System Safety J.*, Volume 234, June 2023. <https://doi.org/10.1016/j.ress.2023.109169>

----- [2022] -----

J.112 Integration of deep learning and Bayesian networks for condition and operation risk monitoring of complex engineering systems, R. Moradi, S. Cofre-Martel, E. Lopez Droguett, M. Modarres, K. M. Groth, *Reliability Engineering and System Safety J.*, 222 (2022) <https://doi.org/10.1016/j.ress.2022.108433>

J. 111 Effectively communicating developmental system reliability growth plans and risk, P. J. Nation, M. Wayne, M. Modarres, *Australian Journal of Multidisciplinary Engineering*, Volume 18, 2022 - Issue 1, <https://doi.org/10.1080/14488388.2022.2044652>

----- [2021] -----

J.110 Big Machinery Data Preprocessing Methodology for Data-Driven Models in Prognostics and Health Management, S. Cofre-Martel, E. Droguett, M. Modarres, *Sensors*, October 2021, 21(20), 6841; <https://doi.org/10.3390/s21206841>

J. 109 A Bayesian Network Approach for Modeling Dependent Seismic Failures in a Nuclear Power Plant Probabilistic Risk Assessment, J. DeJesus Segarra, M. Bensi, M. Modarres, *Reliability Engineering and System Safety J.*, 213 (2021) 107678, <https://doi.org/10.1016/j.ress.2021.107678>

J. 108 Multi-Unit Nuclear Power Plant Probabilistic Risk Assessment: A Comprehensive Survey, T. Zhou, M. Modarres, E. López Droguett, *Reliability Engineering and System Safety* 213 (2021) 107782, <https://doi.org/10.1016/j.ress.2021.107782>

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- J.107 Acoustic emission signal clustering in CFRP laminates using a new feature set based on waveform analysis and information entropy analysis, S. F. Karimian, M. Modarres, Composite Structures J., Vol. 268, July 2021, 113987, <https://doi.org/10.1016/j.compstruct.2021.113987>
-
- J.106 Remaining Useful Life Estimation Through Deep Learning Partial Differential Equation Models: A Framework for Degradation Dynamics Interpretation Using Latent Variables, S. Cofre, E. López Droguett, M. Modarres, Shock and Vibration. 2021, 9937846, <https://doi.org/10.1155/2021/9937846>
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- [2020] -----
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- J.105 Understanding and Effectively Managing Conservatisms in Safety Analysis, M. Modarres, S. Krahn, J. O'Brien, Nuclear Technology J., 2020, <https://doi.org/10.1080/00295450.2020.1805258>
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- J.104 Layout Optimization of Multi-type Sensors and Human Inspection Tools with Probabilistic Detection of Localized Damages for Pipelines, A. Aria, S. Azarm, and M. Modarres, IEEE Access J., Vol. 9, [10.1109/ACCESS.2020.2992671](https://doi.org/10.1109/ACCESS.2020.2992671).
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- J.103 Extension of Probabilistic Seismic Hazard Analysis to Account for Spatial Variability of Ground Motions at a Multi-Unit Nuclear Power Plant Site, J. DeJesus-Segarra, M. Bensi, M. Modarres, and T. Weaver, Structural Safety J., Vol. 85, 101985, <https://doi.org/10.1016/j.strusafe.2020.101958>.
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- J.102 A Deep Adversarial Approach Based on Multi-sensor Fusion for Semi-supervised Remaining Useful Life Prognostics, D. Verstraete, E. Droguett, M. Modarres, Sensors, 20, 176 (2020), <https://doi.org/10.3390/s20010176>.
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- J.101 A Common Cause Failure Model for Components Under Age-Related Degradation, T. Zhou, E. Droguett, M. Modarres, Reliability Engineering and System Safety J., Vol.195 (2020), <https://doi.org/10.1016/j.ress.2019.106699>.
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- J.100 A New Method for Detecting Fatigue Crack Initiation in Aluminum Alloy Using Acoustic Emission Waveform Information Entropy, S. F. Karimian, H. A. Bruck, and M. Modarres, Engineering Fracture Mechanics, Vol. 223 (2020) <https://doi.org/10.1016/j.engfracmech.2019.106771>.
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- [2019] -----
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- J.99 Thermodynamic Entropy to Detect Fatigue Crack Initiation Using Digital Image Correlation, and Effect of Overload Spectrums, F. Karimian, H. Bruck, M. Modarres, International Journal of Fatigue, 129 (2019). <https://doi.org/10.1016/j.ijfatigue.2019.105256>.
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- J. 98 Estimation of Damage Size and Remaining Useful Life in Degraded Structures through Deep-Learning Based Multi-Source Data Fusion, A. Aria, E. Droguett, S. Azarm, and M. Modarres, Structural Health Monitoring J., (2019). <https://doi.org/10.1177/1475921719890616>
-
- J.97 Modeling Uncertainty in Reliability Growth Planning for Discrete-Use Systems, P. Nation and M. Modarres, Australian Journal of Multidisciplinary Engineering, Vol. 15, No.1, 2019. <https://doi.org/10.1080/14488388.2019.1661808>.
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- J.96 Measures of Entropy to Characterize Fatigue Damage in Metallic Materials, H. Yun and M. Modarres, Entropy J., 21, 804. DOI: <https://doi.org/10.3390/e21080804>.
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- J.95 Deep Semi-Supervised Generative Adversarial Fault Diagnostics of Rolling Element Bearings, D. Verstraete, E. Droguett, A. Ferrada, V. Meruane, M. Modarres, Structural Health Monitoring J., pp.1–22 (2019). DOI: <https://doi.org/10.1177/1475921719850576>.
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- J. 94 Multi-Unit Risk Aggregation with Consideration of Uncertainty and Bias in Risk Metrics, T. Zhou, M. Modarres, E. Droguett, Reliability Engineering and System Safety J., [Volume 188](https://doi.org/10.1016/j.ress.2019.04.001), Pages 473-482,(2019), <https://doi.org/10.1016/j.ress.2019.04.001>.
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- [2018] -----
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- J.93 Structural Reliability Prediction Using Acoustic Emission-based Modeling of Fatigue Crack Growth, A. Keshtgar, C. Sauerbrunn, M. Modarres, J. Appl. Sci. 2018, 8, 1225; <https://doi.org/10.3390/app8081225>.
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- J.92 Monitoring and Learning Algorithms for Dynamic Hybrid Bayesian Network in On-line System Health Management Applications, C. Iamsung, A. Mosleh, M. Modarres, Reliability Engineering and System Safety J., 178 (2018) pp 118-129. <https://doi.org/10.1016/j.ress.2018.05.016>.
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- J. 91 A Recursive Bayesian Approach to Small Fatigue Crack Propagation and Detection Modeling, R. Smith, M. Modarres, E. Droguett, J. of Risk and Reliability, 2018, <https://doi.org/10.1177/1748006X18758721>.
-
- J.90 Fatigue Crack Initiation Sizing Using Acoustic Emission, Azadeh Keshtgar and Mohammad Modarres, J. of Civil Engineering and Architecture 11 (2017) 1112-1122. <https://doi.org/10.17265/1934-7359/2017.12.006>.
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- J.89 An Improved Multi-Unit Nuclear Plant Seismic Probabilistic Risk Assessment Approach, T. Zhou, M. Modarres, E. L. Droguett, Reliability Engineering and System Safety J., 171 (2018) 34-37. <https://doi.org/10.1016/j.ress.2017.11.015>.
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- J.88 Fully Adaptive Particle Filtering Algorithm for Damage Diagnosis and Prognosis, E. Rabiei, E. Droguett and M. Modarres, Entropy J., Entropy 2018, 20, 100; <https://doi.org/10.3390/e20020100>.
-
- J.87 A Review of Oil and Gas Pipeline Pitting Corrosion Growth Models Applicable for Prognostic and Health Management, R. Heidary, S. Gabriel, M. Modarres, K. Groth, N. Vahdati, International Journal of Prognostics and Health Management, ISSN 2153-2648, 2018 009. <https://www.phmsociety.org/node/2453>.
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- [2017] -----
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- J.86 Deep Learning Enabled Fault Diagnosis Using Time-Frequency Image Analysis of Rolling Element Bearings, D. Verstraete, E. Droguett, V. Meruane, M. Modarres, and A. Ferrada, Shock and Vibration J., 2017. Shock and Vibration, Volume 2017, <https://doi.org/10.1155/2017/5067651>.
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- J.85 A Multivariable Model of the Probability of Detection and Sizing of Small Cracks, A. Barrett, R. Smith, and M. Modarres, Eng. Failure Analysis J., Vol. 94, Dec. 2018, 182-194, <https://doi.org/10.1016/j.engfailanal.2018.07.028>.
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- J.84 Fatigue Crack Initiation Sizing Using Acoustic Emission, Azadeh Keshtgar, Journal of Civil Engineering and Architecture 11 (2017) 1112-1122, <https://doi.org/10.17265/1934-7359/2017.12.006>.
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- J.83 A Thermodynamic Entropy-Based Damage Assessment with Applications to Prognosis and Health Management, A. Imanian, M. Modarres, Structural Health Monitoring J., February 2017, pp.1-5, <http://dx.doi.org/10.1177/1475921716689561>.
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- J.82 Advances in Multi-Unit Nuclear Power Plant Probabilistic Risk Assessment, M. Modarres, T. Zhou, M. Massoud, Reliability Engineering & System Safety, Volume 157, January 2017, Pages 87–100. <https://doi.org/10.1016/j.ress.2016.08.005>
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- J.81 Multi-Unit Accident Contributions to Quantitative Health Objectives: A Safety Goal Policy Analysis, D. Hudson, M. Modarres, Nuclear Technology J., Volume 197, 2017, <http://dx.doi.org/10.1080/00295450.2016.1273714>.
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- J.80 Damage Assessment Using Information Entropy of Individual Acoustic Emission Waveforms During Cyclic Fatigue Loading, C. M. Sauerbrunn, A. Kahirdeh, H. Yun, M. Modarres, Applied Sciences J., 2017, 7, 562; <https://doi.org/10.3390/app7060562>.
-
- J.79 A Parametric Approach to Acoustic Entropy Estimation for Assessment of Fatigue Damage, A. Kahirdeh, C. Sauerbrunn, H. Yun, M. Modarres, International Journal of Fatigue, Volume 100, Part 1, July 2017, pp 229–237, <https://doi.org/10.1016/j.ijfatigue.2017.03.019>.
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- [2016] -----
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- J.78 A Prognostics Approach Based on the Evolution of Damage Precursors using Dynamic Bayesian Networks, E. Rabiei, E. L. Droguett, M. Modarres, Advances in Mechanical Engineering, Advances in Mechanical Engineering, Vol. 8(9), 2016, pp1–19. <https://doi.org/10.1177/1687814016666747>.
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- J.77 Thermodynamic Entropy Generation in the Course of the Fatigue Crack Initiation, V. Ontiveros, M. Amiri, A. Kahirdeh, M. Modarres, Fatigue & Fracture Engineering of Material Structures, 2016, 00 1–12, <https://doi.org/10.1111/ffe.12506>.
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- J.76 Thermodynamics as a Fundamental Science of Reliability, A. Imanian, M. Modarres, Int. J. of Risk and Reliability, Vol.230(6), pp.598-608. <https://doi.org/10.1177/1748006X16679578>.
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- C.284 Synthesis of Questionnaire Insights Regarding Current PRA and Additional Tools, J. Shen, M. Bensi, M. Modarres, (PSAM-16), Honolulu, Hawaii, June 26-July 1, 2022.
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- C.283 Identification and Assessment of Current and Developing PRA Technologies for Risk Informed Decision Making (RIDM), J. Shen, M. Bensi, M. Modarres, (PSAM-16), Honolulu, Hawaii, June 26-July 1, 2022.
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- C.282 External Flood Fragility Development and Integrating Novel Tools to the XFPRA Framework, J. Shen, M. Bensi, M. Modarres, Probabilistic Safety Assessment & Management, (PSAM-16), Honolulu, Hawaii, June 26-July 1, 2022.
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- C.281 Design of Reliability Test Specification for a New Product with Unknown Failure Modes, N. Shafiei, J. W. Herrmann, A. Krive, G. Sethi, M. P. Nikiforov, and M. Modarres, Probabilistic Safety Assessment & Management (PSAM-16), Honolulu, Hawaii, June 26-July 1, 2022.
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- C. 280 Physics-Informed Neural Networks for Remaining Useful Life Estimation of a Vapor Recovery Unit System, S. Cofre, E. Droguett, M. Modarres, Probabilistic Safety Assessment & Management (PSAM-16), Honolulu, Hawaii, June 26-July 1, 2022.
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- C.279 Flood Fragility Function Methodology for a Conceptual Nuclear Power Plants, J. Shen, M. Bensi, M. Modarres, Probabilistic Flood Hazard Assessment (PFHA) Research Workshop, February 15-18, 2022, Rockville, MD.
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- C.278 Estimating Product Reliability from User Survey Data, N. Shafiei, J. W. Herrmann, Aaron Krive, M. Modarres, 68th Annual Reliability and Maintainability Symposium (RAMS 2022), Tucson, AZ, January 24-27, 2022.
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- [2021] -----
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- C.277 A Bayesian Approach to Discrete-Use System Reliability Growth Planning Under Delayed or Arbitrary Corrective Actions, P. Nation, M. Wayne, M. Modarres, 2021 SERAD Student Paper Contest, IMECE2021, Virtual Conference, Online, November 1 – 5, 2021. Awarded the Honorable Mention.
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- C.276 Structural Health Monitoring in Open-Hole CFRP Laminates Under Fatigue Loading Based on Thermodynamic Entropy Analysis, S. F. Karimian, M. Modarres, H. A. Bruck, IWSHM 2021, The 13th International Workshop on Structural Health Monitoring, Stanford, CA.
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- C.275 Defining Degradation States for Diagnosis Classification Models in Real Systems Based on Monitoring Data, S. Cofre-Martel, C. Correa-Jullian, E. López Droguett, K. M. Groth and M. Modarres, 31st European Safety and Reliability (ESREL2021) Conference, 19-23 September 2021, Angers, France.
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- C.274 Component Degradation Detection Through Auto Encoders Based on Monitoring Data, S. Cofre-Martel, E. Lopez Droguett, and M. Modarres, 31st European Safety and Reliability (ESREL2021) Conference | 19-23 September 2021, Angers, France.
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- C.273 Degradation Diagnosis Data-Driven Models for A Mining Process System Based on Monitoring Data, S. Cofre-Martel, C. Correa-Jullian, E. Lopez Droguett, K. Groth, and M. Modarres, 31st European Safety and Reliability (ESREL2021) Conference | 19-23 September 2021, Angers, France.
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- C.272 Designing Reliability-Informed Customer Surveys, N. Shafiei, J. Herrmann, A. Krive, G. Sethi, M. Modarres, 31st European Safety and Reliability (ESREL2021) Conference | 19-23 September 2021, Angers, France.
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- C.271 Developing Flooding Fragility Curves of Safety – Related Equipment, J. Shen, M. Bensi, M. Modarres, International Topical Meeting on Probabilistic Safety Assessment (PSA2021), August 29–September 3, 2021, Columbus, OH.
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- C.270 Analysis of Common Cause Failures with Effects of Degradation and Maintenance, T. Zhou, E. López Droguett, M. Modarres, International Topical Meeting on Probabilistic Safety Assessment (PSA2021), August 29–September 3, 2021, Columbus, OH.
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- C.269 A Bayesian Approach to Complex Discrete-Use System Reliability Growth Planning Under Delayed or Arbitrary Corrective Actions, P. Nation, M. Wayne, M. Modarres, Integrated Project Engineering Congress (IPEC), May 2021, Brisbane, Australia (May 2021).
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- C.268 A Comparison of Empirical Bayes Hyperparameter Approaches for Discrete Use System Initial Reliability Estimation, P. Nation, M. Wayne, M. Modarres, Integrated Project Engineering Congress (IPEC), May 2021, Brisbane, Australia (May 2021).
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- C.267 Effectively Communicating Developmental System Reliability Growth Plans and Risk to Decision Makers, P. Nation, M. Wayne, M. Modarres, Integrated Project Engineering Congress (IPEC), May 2021, Brisbane, Australia (May 2021).
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- C.266 Uses of Thermodynamic and Information Entropies to Predict Reliability of Components Under Fatigue Damage, S. F. Karimian and M. Modarres, IMECE 202, Nov 1-4, Virtual conference.
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- C. 265 Pragmatic Approaches to Improve Realism in Modeling Dependencies in Seismic PRAs for Nuclear Power Facilities, J. DeJesus Segarra, M. Bensi, M. Modarres, 13th International Conference on Structural Safety and Reliability (ICOSSAR 2021), June 21-25, 2021, Shanghai, P.R. China, J. Li, Pol D. Spanos, J.B. Chen & Y.B. Peng (Eds)
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- C. 264 Fatigue crack initiation prognostics using two entropic indices and dynamic Bayesian network, S. F. Karimian and M. Modarres, 67th Annual Reliability and Maintainability Symposium (RAMS 2021), Orlando FL, January 25-28. 2021.
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- C. 263 Reliability Data Interpretation Through Partial Differential Equations: A Deep Learning Framework, S. Cofre, E. Droguett, M. Modarres, 67th Annual Reliability and Maintainability Symposium (RAMS 2021), Orlando FL, January 25-28. 2021.
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- [2020] -----
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- C.262 Neural Network and Particle Filtering: A Hybrid Framework for Crack Propagation Prediction, S. Fouad Karimian, R. Moradi, S. Cofre-Martel, K. M. Groth, M., Modarres, Virtual: 3rd International Symposium on Structural Health Monitoring and Nondestructive Testing 25-26 Nov 2020, Quebec, Canada (SHM-NDT 2020).
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- C.261 Reliability Engineering: Today and Beyond, 6th Annual Conference of the Institute for Quality and Reliability of Tsinghua University, Abstract for the keynote talk, July 2020.
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- C.260 Understanding Risks: Natural Gas Distribution Piping in the United States, S. Lyons, M. Modarres, International Pipeline Conference IPC2020, Calgary, Canada, Sept. 28-October 02, 2020.
<https://doi.org/10.1115/IPC2020-9238>
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- C.259 A Physics-Informed Deep Learning Approach for Fatigue Crack Propagation, S. Cofre, E. Droguett, M. Modarres, Proceedings of the 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference, Venice, Italy, 1 - 6 Nov. 2020. DOI:[10.3850/978-981-14-8593-0_4973-cd](https://doi.org/10.3850/978-981-14-8593-0_4973-cd)
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- C.258 Uncovering the Underlying Physics of Degrading System Behavior Through a Deep Neural Network Framework: The Case of RUL Prognosis, S. Cofre-Martel, E. Droguett, M Modarres, ASME-IMECE Congress and Exposition, November 16 – 19, 2020. *Winner of the Best Student Award in SER2AD Student Safety Innovation Challenge.*
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- C.257 A Physics of Failure Data Approach to Common Cause Failure Considering Component Degradation, R. Smith, M. Modarres, 66th Annual Reliability and Maintainability Symposium (RAMS 2020), January 27-30, 2020, Palm Springs, California. DOI:[10.1109/RAMS48030.2020.9153651](https://doi.org/10.1109/RAMS48030.2020.9153651)
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- [2019] -----
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- C.256 An Intelligent Prognostic Health Management (PHM) Based Approach: Generating Value from a More Integrated Hydrocarbon Production Chain, A. Al-Tamimi, M. Modarres, E. Droguett, and A. Mosleh, Abu Dhabi National Exhibition Center, UAE, 11-14 November 2019.
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- C.255 Characterization and Quantification of Uncertainties in Probabilistic Fracture Mechanics with Applications to Probability of Detection and Sizing of Flaws and Cracks, M. Modarres, 3rd International Seminar on Probabilistic Methodologies for Nuclear Applications, Rockville, MD, Oct. 22-24, 2019.
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- C.254 A Review of Best Practices for Application of Probabilistic Fracture Mechanics to Passive Pressure-Boundary Components, M Kirk and M. Modarres, 3rd International Seminar on Probabilistic Methodologies for Nuclear Applications, Rockville, MD, Oct. 22-24, 2019.
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- C.253 A Machine Learning Approach to Integrity Management of Pipelines, A. Aria, R. Heidary, K. M. Groth, S. Azarm, and M. Modarres, SPE Workshop on Digital Asset Integrity Management (D-AIM), Abu Dhabi, UAE, 8-9 April 2019.

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- C.252 Modeling Continuous-Use System Reliability Growth Utilizing Disparate Source Data, P. Nation, M. Modarres, Proceedings of the System Engineering Test and Evaluation Conference 2019 (SETE), 29 April - 1 May, 2019, Canberra, Australia.
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- C.251 Modeling Uncertainty in Reliability Growth Planning for Continuous-Use Systems, P. Nation, M. Modarres, Proceedings of the System Engineering Test and Evaluation Conference 2019 (SETE), 29 April - 1 May 2019, Canberra, Australia.
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- C.250 Method to Obtain Spatially Variable Ground Motion Hazards on A Nuclear Power Plant Site, J. De- Jesus Segarra, M. Bensi, M. Modarres, Structural Mechanics in Reactor Technology (SMiRT 25), 04 Aug 2019 - 09 Aug 2019, Charlotte, NC.
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- C.249 Safety Goals and Associated Quantitative Health Objectives (QHOs) Applied to Multi-Units Sites, D. Hudson, M. Modarres, International Topical Meeting on Probabilistic Safety Assessment (PSA2019), Charleston, SC, 29 April - 5 May 2019.
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- C.248 Understanding and Effectively Managing Conservatisms in Safety Analysis, S. Krahn, M. Modarres, J. O'Brien, International Topical Meeting on Probabilistic Safety Assessment (PSA2019), Charleston, SC, 29 April - 5 May 2019.
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- C.247 Incorporation of Spatial Variability of Ground Motions in A Seismic Multi-Unit Probabilistic Risk Assessment, J. DeJesus-Segarra, M. Bensi, M. Modarres, International Topical Meeting on Probabilistic Safety Assessment (PSA2019), Charleston, SC, 29 April - 5 May 2019.
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- C.246 Risk-Informed Acceptance Criteria for Evaluating Leak-Before-Break in Piping Susceptible to Primary Water Stress Corrosion Cracking Degradation, Sara Lyons, M. Modarres, International Topical Meeting on Probabilistic Safety Assessment (PSA2019), Charleston, SC, 29 April - 5 May 2019. (winner of the Best Paper Award)
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- C.245 A Review of Selected Multi-Unit PRA Issues, M. Modarres, International Topical Meeting on Probabilistic Safety Assessment (PSA2019), Charleston, SC, 29 April - 5 May 2019.
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- C.243 A Deep Adversarial Approach Based on Multi-Sensor Fusion for Remaining Useful Life Prognostics, D. Verstraete, E., López Droguett, M. Modarres, 29th European Safety and Reliability Conference, Hannover, Germany, 29 September 2019.
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- C.242 A Deep Adversarial Learning Approach for Damage Prognostics, D. Verstraete, E., López Droguett, M. Modarres, 65th Reliability and Maintainability Symposium (RAMS 2019), 28 - 31 January 2019, Orlando, Florida
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- [2018] -----
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- C.241 Fusing More Frequent and Accurate Structural Damage Information from One Location to Assess Damage at another Location with Less Information, R. Heidary, K. M. Groth, and M. Modarres, Proceedings of Probabilistic Safety Assessment & Management conference (PSAM-14), 16-21 September 2018, Los Angeles, CA.
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- C.240 A Performance Data-Driven Physics-Based Approach to Common Cause Failure Modeling, T. Zhou, E. Droguett, M. Modarres, Proceedings of Probabilistic Safety Assessment & Management conference (PSAM-14), 16-21 September 2018, Los Angeles, CA.
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- C.239 A Study of Multi-Unit Seismic Probabilistic Risk Assessment, T. Zhou, M. Modarres, E. Droguett, Proceedings of Probabilistic Safety Assessment & Management (PSAM-14), 16-21 Sept. 2018, Los Angeles, CA.
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- C.238 High Detection-integrity and Cost-effective Health Monitoring of Slow Degradation Processes with Localized Damages, A. Aria, M. Modarres, S. Azarm, Proceedings of Probabilistic Safety Assessment & Management (PSAM-14), 16-21 September 2018, Los Angeles, CA.
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- C.237 Multi-Unit Dependency Modeling Based on Reported Japanese Nuclear Power Plant Incidents, Y. Nakano, S. Takeda, T. Kitada, T. Zhou, M. Modarres, Proceedings of Probabilistic Safety Assessment & Management (PSAM-14), 16-21 September 2018, Los Angeles, CA.
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- C.236 Framework for Modeling Ground Motion Correlation for Multiple Units at a Nuclear Power Plant Site, J. DeJesus, M. Bensi, and M. Modarres, Proceedings of Probabilistic Safety Assessment & Management (PSAM-14), 16-21 September 2018, Los Angeles, CA.
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- C.235 A Review of Multi-Unit Nuclear Power Plant Probabilistic Risk Assessment Research, T. Zhou, M. Modarres, E. Droguett, ASME International Conference on Nuclear Engineering (26th ICONE), 22-26, July 2018, London, UK.
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- C.234 An Outline of MUPSA: Site-Level Dependencies, Risk Metrics, Safety Goals and Risk Information (Invited), M. Modarres, Proceedings of the Nuclear Energy Agency International Workshop on Site Level PSA Developments, Munich, Germany, July 18-20, 2018.
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- C.233 Some Misconceptions About Multi-Unit PSAs (Invited), M. Modarres, Proceedings of the Nuclear Energy Agency International Workshop on Site Level PSA Developments, Munich, Germany, July 18-20, 2018.
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- C.232 Closing the Fuel Cycle: Molten Salt Reactors, K. Lawson, M. Modarres, American Nuclear Society National Meeting, Philadelphia, PA, June 17-June 21, 2018.
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- C.231 Unsupervised Deep Generative Adversarial Based Methodology for Automatic Fault Detection, D.B. Verstraete, E. López Droguett, A.N. Ferrada, V. Meruane, M. Modarres, European Safety and Reliability Conference (ESREL2018), 17-21 June 2018, Trondheim, Norway.
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- C.230 Acoustic Emission Based Fault Diagnosis via a Novel Deep Convolutional Neural Network Method, D. Toledo, E. Droguett, V. Meruane, M. Modarres, European Safety and Reliability Conference (ESREL2018), 17-21 June 2018, Trondheim, Norway.
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- C.229 Understanding and Effectively Managing Conservatisms in Safety Analysis, James O'Brien, M. Modarres, S. Krahn, European Safety and Reliability Conference (ESREL2018), 17-21 June 2018, Trondheim, Norway.
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- C.228 Deep Semi-Supervised Generative Adversarial Fault Diagnostics for Rolling Element Bearings, D. Verstraete, E., López Droguett, M. Modarres, V. Meruane, Engineering Mechanics Institute Conference, Symposium on Progressive Damage and Failure in Structures and Materials: Testing and Simulation, MIT, Cambridge, MA May 29 – June 1, 2018.
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- C.227 Damage Assessment in Materials with Entropic Measures, H. Yun, M. Modarres, Engineering Mechanics Institute Conference, Symposium on Progressive Damage and Failure in Structures and Materials: Testing and Simulation, MIT, Cambridge, MA May 29 – June 1, 2018.
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- C.226 Physics-of-Failure: An Entropic Perspective, M. Modarres, Entropy 2018: From Physics to Information Sciences and Geometry (Invited), 14-16 May 2018, Barcelona, Spain.
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- C.225 On a Case Study in Optimization-based Layout Design of Sensors for a Pipeline Using Synthetic Localized Corrosion Data, A. Aria, S. Azarm, M. Modarres, Research & Development Petroleum Conference and Exhibition, Abu Dhabi, May 9-10, 2018.
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- C.224 Entropic Approaches to Measuring Damage with Applications to Fatigue Failure and Structural Reliability, H. Yun, M. Modarres, Proceedings of the RAMS-2018, 22-25 January 2018, Reno, Nevada.
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- [2017] -----
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- C.223 Risk Assessment of Energy Systems Exposed to Climate Change Induced Stresses: A Systematic Framework, M. Modarres, M. Pourgolmohammad, ASME 2017 International Mechanical Engineering Congress & Exposition, IMECE2017, November 3-9, 2017, Tampa, Florida, USA.
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- C.222 Degradation Entropy: An Acoustic Emission Based Approach to Structural Health Assessment, A. Kahirdeh, Huisung Yun, M. Modarres, Proceedings of the Structural Health Monitoring, Sept. 2017, Stanford University, CA.
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- C.221 Effects of Including Multi-Unit Accident Contributions to Safety Goal Quantitative Health Objectives: Insights from a Two-Unit Case Study Involving Two Representative U.S. Nuclear Power Plant Sites, D. Husdon, M. Modarres, International Topical Meeting on Probabilistic Safety Assessment (PSA2017), Sept. 24-28, Pittsburg, PA.

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- C.220 A Multi-Unit Probabilistic Risk Assessment Approach with Application to Seismic Events, T. Zhou, M. Modarres, E. López Droguett, International Topical Meeting on Probabilistic Safety Assessment (PSA2017), September 24-28, Pittsburg, PA.
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- C.219 Damage Precursors from Acoustic Emission Parameters from Fatigue Loading, H. Yun, C. Sauerbrunn, A. Kahirdeh, and M. Modarres, 14th International Conference on Fracture (ICF 14), June 18-23, 2017, Rhodes, Greece.
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- C. 218 Entropic Methods to Study the Evolution of Damage and Degradation of Materials, A. Kahirdeh, H. Yun, and M. Modarres, 14th International Conference on Fracture (ICF 14), June 18-23, 2017, Rhodes, Greece.
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- C.217 Damage Monitoring and Prognostics in Composites via Dynamic Bayesian Networks, E. Rabiei, E. L. Droguett, M. Modarres, Proceedings of the 61st Reliability and Maintainability Symposium (RAMS2017), January 23-26, 2017, Orlando, Florida.
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- [2016] -----
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- C.216 Tools for Analysis of Accelerated Life and Degradation Test Data, R. Smith, M. Modarres, Proceedings of the Accelerated Stress Testing and Reliability (ASTR), Sept. 28-30, Pensacola Beach, Florida, 2016.
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- C.215 Safety Goals and Associated Quantitative Health Objectives (QHOs) Applied to Multi-Units Sites (invited panel), M. Modarres, Probabilistic Safety Assessment & Management (PSAM-13), 2-7 Oct. 2016, Seoul, South Korea.
-
- C.214 Framework for Assessing Integrated Site Risk of Small Modular Reactors Using Dynamic Probabilistic Risk Assessment Simulation, M. Dennis, M. Modarres, A. Mosleh, Proceedings of Probabilistic Safety Assessment & Management (PSAM-13), 2-7 October 2016, Seoul, South Korea.
-
- C.213 Multi-Unit Probabilistic Risk Assessment with Application to Seismic Events at a Two-Unit Site, T. Zhou, M. Modarres, E. L. Droguett, Proceedings of Probabilistic Safety Assessment & Management (PSAM-13), 2-7 October 2016, Seoul, South Korea.
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- C.212 Can Energy Dissipation and Entropy Production Characterize Damage Evolution in Loaded Solid Materials, A. Kahirdeh, H. Yun, C. Sauerbrunn, M. Modarres, Proceedings of the 36th Int. Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering (MaxEnt 2016) July 10-15, 2016, Ghent, Belgium.
-
- C.211 Small Crack Fatigue Growth and Detection Modeling with Uncertainty and Acoustic Emission Application, R. Smith, M. Modarres, Proc. of the Int. Work-Conf. on Time Series (ITISE 2016), 27-29 June 2016. Granada, Spain.
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- C.210 A Hybrid Probabilistic Physics of Failure Pattern Recognition based Approach for Assessment of Multi-Unit Causal Dependencies, T. Zhou, E. Droguett, M. Modarres, Proceedings of the 2016 24th International Conference on Nuclear Engineering (ICONE24), June 26-30, 2016, Charlotte, North Carolina.
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- C.209 Effects of Material Variation on Acoustic Emissions-Based, Large-Crack Growth Model C. Sauerbrunn, M. Modarres, Proceedings of the 25th American Society for Nondestructive Testing (ASNT2016) Research Symposium, 11-16 April 2016, New Orleans, LA.
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- [2015] -----
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- C.208 A Hybrid Probabilistic Physics of Failure Pattern Recognition based Approach for Assessment of Multi-Unit Causal Dependencies, T. Zhou, E. López Droguett, M. Modarres, Topical PSAM Meeting on Safety and Reliability of Oil and Gas Exploration and Production. Nov. 23- 25, 2015 - Rio de Janeiro, Brazil.
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- C.207 Acoustic Emission Entropy as a Measure of Damage in Materials, Ali Kahirdeh, Christine Sauerbrunn, Mohammad Modarres, Proceedings of the 35th International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering, MaxEnt-2015, Potsdam, NY, 2015.
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- C.206 Corrosion-Fatigue Structural Integrity Assessment Using a Thermodynamic Entropy Based Damage Approach, A. Imanian, M. Modarres, International Mechanical Engineering Congress and Exposition (IMECE2015) Houston, Texas, Nov. 13-15, 2015.
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- C.205 Risk Perspectives and Academic Research on Severe Accidents and Dynamic Simulation-Based Risk Assessment, Invited Panel at the Topical Meeting, 9th International Conference on Nuclear Plant

- Instrumentation, Control & Human–Machine Interface Technologies (NPIC & HMIT 2015), North Carolina, Feb. 24, 2015.
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- C.204 Damage Precursor Based Structural Health Monitoring and Damage Prognosis Framework, E. Rabiei, E. Droguett, M. Modarres, European Safety and Reliability Conference (ESREL2015) Zürich, Switzerland, Sept. 2015.
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- C. 203 An Entropy-Based Theory of Reliability with the Application to Corrosion Fatigue, A. Imanian, M. Modarres, European Safety and Reliability Conference (ESREL2015) Zürich, Switzerland, Sept. 2015.
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- C.202 Framework for assessing integrated site risk of small modular reactors using dynamic probabilistic risk assessment simulation, M. Dennis, M. Modarres, A. Mosleh, European Safety and Reliability Conference (ESREL2015) Zürich, Switzerland, Sept. 2015.
-
- C.201 A Thermodynamic Entropy Based Approach for Fault Detection and Prognostics of Samples Subjected to Corrosion Fatigue Degradation Mechanism, A. Imanian, M. Modarres, 2015 IEEE International Conference on Prognostics and Health Management (PHM2015), Austin, TX, June 22-25, 2015.
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- C.200 AE Entropy for Detection of Fatigue Crack Initiation and Growth, M. Amiri, M. Modarres, E. Droguett, IEEE International Conference on Prognostics and Health Management (PHM2015), Austin, TX, June 22-25, 2015.
-
- C.199 An Entropic Theory of Damage with Applications to Corrosion-Fatigue Structural Integrity Assessment, A. Imanian, M. Modarres, Annual Conference & Exposition on Experimental and Applied Mechanics (SEM 2015), June 8-11, 2015, Costa Mesa, CA.
-
- C.198 Small Fatigue Crack Initiation and Sizing Using Acoustic Emission, A. Keshtgar, M. Modarres, The Annual Meeting of the Society for the Advancement of Material and Process Engineering (SAMPE2015), Baltimore, MD, May 18-21, 2015.
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- C.197 Development of a Generalized Entropic Framework for Damage Assessment, A. Imanian, M. Modarres, International Topical Meeting on Probabilistic Safety Assessment (PSA2015), April 26-30, 2015, Sun Valley, ID.
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- C.196 Multi-Unit Nuclear Plant Risks and Implications of the Quantitative Health Objectives, M. Modarres, International Topical Meeting on Probabilistic Safety Assessment (PSA2015), April 26-30, 2015, Sun Valley, ID.
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- C.195 Framework for Assessing Integrated Site Risk of Small Modular Reactors Using Dynamic Probabilistic Risk Assessment Simulation, Matthew Dennis, M. Modarres, A. Mosleh, Z. Wang, International Topical Meeting on Probabilistic Safety Assessment (PSA2015), April 26-30, 2015, Sun Valley, ID.
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- C.194 Integrity Management Using Non-Destructive Test Data and Other Information, M. Modarres, 2015 Plant Maintenance & Reliability, 6th Global Praxis Interactive Technology Workshop, Feb. 16-19, 2015 Abu Dhabi, UAE.
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- C.193 Development and Training Needs for Reliability Engineers, M. Modarres, The 61st Reliability and Maintainability Symposium (RAMS2015), Jan. 26-29, Tampa, FL. (Invited Panel Talk).
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- C.192 Computational Algorithm for Hybrid DBN in On-line SHM Applications, C. Iamsumang, A. Mosleh, M. Modarres, The 61st Reliability and Maintainability Symposium (RAMS2015), Jan. 26-29, Tampa, FL.
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- [2014] -----
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- C.191 Significance of Multi-Unit Nuclear Plant Risks and Implications of the Site-Level Quantitative Health Objectives, M. Modarres, OECD/NEA International Technical Workshop on Multi-Unit Probabilistic Safety Assessment (PSA), Ottawa, Canada, 17 – 20 November 2014 (invited).
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- C.190 Efficient Dependency Computation for Dynamic Hybrid Bayesian Network in On-line System Health Management Applications, C. Iamsumang, A. Mosleh, M. Modarres, Proceedings of the annual conference of the prognostics and health management society, Sep. 2014.
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- C.189 A Thermodynamic Entropy Based Approach for Prognosis and Health Management A. Imanian, M. Modarres, Proc. of the annual conference of the prognostics and health management soc., Sep. 2014.

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- C.188 Improved Probabilistic Remaining Useful Life Estimation in Structures: Modeling Multi-site Fatigue Cracking in Oil and Gas Service Structures, A. Al Tamimi, M. Modarres, Proceedings of the Annual Conference of the Prognostics and Health Management Society, Sep. 2014.
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- C.187 Computational Algorithm for Dynamic Hybrid Bayesian Network in On-Line System Health Management Applications, C. Iamsumang, A. Mosleh, M. Modarres, Proceedings of the 2014 IEEE International Conference on Prognostics and Health Management, June 22-25, 2014, Spokane, WA.
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- C.186 A Science-Based Theory of Reliability Founded on Thermodynamic Entropy, A. Imanian, M. Modarres, Probabilistic Safety Assessment & Management conference, PSAM-12, Honolulu, Hawaii. 22-27 June 2014.
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- C.184 University of Maryland Reliability Engineering Curriculum: Structure and Philosophy, Mohammad Modarres, Proceedings of the RAMS-2014 Symposium, Colorado Springs, Colorado, January 27-30, 2014 (Panel).
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- C.185 Assessing Reliability Using Developmental and Operational Test Data, Martin Wayne, Mohammad Modarres, Proceedings of the RAMS-2014 Symposium, Colorado Springs, Colorado, January 27-30, 2014.
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- [2013] -----
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- C.184 Considering Organizational Dependencies in a Multi-Unit PRA, S. (Dennis) Schroer, M. Modarres, Proceedings of the American Nuclear Society Meeting on Risk Management for Complex Socio-Technical Systems (RM4CSS), Nov. 2013, Washington, D.C.
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- C.183 An Explanatory Model of Cyber-Attacks Drawn from Rational Choice Theory, S. Mandelcorn, M. Modarres, and A. Mosleh, Proceedings of the American Nuclear Society Meeting on Risk Management for Complex Socio-Technical Systems (RM4CSS), Nov. 2013, Washington, D.C.
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- C.182 An Agent-Autonomy Approach to Probabilistic Physics-of-Failure Modeling of Dynamic Systems with Interacting Failure Mechanisms, K. Gromek, M. Modarres, Proceedings of the American Nuclear Society Meeting on Risk Management for Complex Socio-Technical Systems (RM4CSS), Nov. 2013, Washington, D.C.
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- C.181 A Probabilistic Characterization of Simulation Model Uncertainties, V. Ontiveros, M. Modarres, ANS Meeting on Risk Management for Complex Socio-Technical Systems (RM4CSS), Nov. 2013, Washington, D.C.
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- C.180 An Event Classification Schema for Considering Site Risk in a Multi-Unit Nuclear Power Plant PRA, S. Dennis (Schroer), M. Modarres, proceedings of the International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA 2013), Sept. 22-25, 2013, Columbia, South Carolina.
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- C.179 Reliability Monitoring Using Log-Gaussian Process Regression, M. Wayne, M. Modarres, the International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA 2013), Sept. 22-25, 2013, Columbia, SC.
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- C.178 Probabilistic Model Development and Application for Fatigue Crack Detection Using Acoustic Emission Technology, A. Keshtgar, M. Modarres, the International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA 2013), Sept. 22-25, 2013, Columbia, South Carolina (Received Best Student Paper Award).
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- C.177 Detecting Crack Initiation Based on Acoustic Emission, A. Keshtgar, M. Modarres, Proceedings of Prognostics and System Health Management (PHM-2013), Sept. 22-25, 2013, Milan, Italy, Chemical Engineering Transactions, Vol. 33, 2013.
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- C.176 Celebrating Fifty Years of Physics of Failure, K. Chatterjee, M. Modarres, J. Bernstein, D. Nicholls, Proceedings of the 2013 Reliability and Maintainability Symposium (RAMS), Jan. 2013, Orlando, FL.
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- C. 175 Acoustic Emission-Based Fatigue Crack Growth Prediction, Azadeh Keshtgar, M. Modarres, Proceedings of the 2013 Reliability and Maintainability Symposium (RAMS), Jan. 2013, Orlando, FL.
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- [2012] -----
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- C.174 A Probabilistic Approach to Support Health Management of Steam Generator Tubes Using Uncertain Inputs from In-Service Inspections, K. Chatterjee and M. Modarres, Proceedings of the 20th International Conference on Nuclear Engineering ICONE20, July 30-August 3, 2012, Anaheim, CA.
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- C.173 Initial Classification of Events to Consider in A Multi-Unit PRA, Suzanne Schroer, Mohammad Modarres, Proceedings of the 20th Int. Conference on Nuclear Engineering ICONE20, July 30-August 3, 2012, Anaheim, CA.
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-
- C.47 An Adaptive Model for a Dynamic Master Logic Diagram, K. Ouliddren, M. Modarres, ANS Topical Meeting on Computer-Based Human Support Systems: Technology, Methods and Future, Philadelphia, June 1995.
-
- C.46 Evaluating System Behavior Through Dynamic MPLD Modeling, Y-S Hu and M. Modarres, ANS Topical Meeting on Computer-Based Human Support Systems: Technology, Methods and Future, Philadelphia, June 1995.
-
- C.45 A Comparison of Three Functional Modeling Methods, R. Irehvije, M. Modarres, M. Lind, Topical Meeting on Computer-Based Human Support Systems: Technology, Methods and Future, Philadelphia, June 1995.
-
- C.44 A Pragmatic Approach to a Function-Centered Ontology of Complex Physical Systems, M. Modarres 2nd International Workshop on Functional Modeling of Complex Technical Systems, Copenhagen, Denmark, Aug. 1994
-
- C.43 Time-Dependent System Knowledge Representation Based on Dynamic MPLD, Y-S. Hu, M. Modarres, 2nd IFAC Workshop on Comp. Soft. Structures Integrating AI/KBS Sys. in Process Control, August 1994, Lund, Sweden.
-
- C.42 Risk-Based Regulation Using REVEAL, H. Dezfuli, J. Meyer, M. Modarres, H. Specter, Proceeding of the PSAM-II Conference, San Diego, CA, March 1994.
-
- C.41 An Introduction to Dynamic MPLD Model, Y-S. Hu and M. Modarres, Proceeding of the PSAM-II Conference, San Diego, CA, March 1994.
-
- C.40 Inferring Safety Trend from the Accident Sequence Precursor Analysis Program, M. Modarres, Proceeding of the PSAM-II Conference, San Diego, CA, March 1994.
-
- C.39 Towards a Taxonomy of System Failures, J. C. Ruiz and M. Modarres, Proceeding of the PSAM-II Conference, San Diego, CA, March 1994.
-
- C.38 Functional Modeling of Complex Systems Using a GTST-MPLD Framework, M. Modarres, Proceedings of the International Workshop on Functional Modeling of Complex Technical Systems, Ispra, Italy, May 1993.
-
- C.37 The Effect of Partial Failures on The Risk of a Nuclear Power Plant, L. Hammersten and M. Modarres, ANS/ENS Conf. on Probabilistic Safety Analysis (PSA'93), Clearwater, FL, Jan. 1993.
-
- C.36 Probabilistic Safety Assessment Using SMART, H. Dezfuli, M. Modarres, A. Ghassemi, W. Martschenko, and J. Meyer, Probabilistic Safety Analysis (PSA'93), ANS Topical Meeting, Clearwater, FL, Jan. 1993.
-
- C.35 On-Line Fault Administration: Investigation of the Role of Expert Systems, L. Chen, J. Won, M. Modarres, Artificial Intelligence and Robotics in Nuclear Plants Conf. (AIR'92), Tokyo, Japan, May 1992 (Invited).
-
- C.34 Application of the Master Plant Logic Diagram in Risk-Based Evaluations During Design, M. Modarres, Transaction of the ANS National Meeting, Boston, June 1992.
-
- C.33 A Framework to Assess the Influence of Organizations on Plant Safety, M. Modarres and A. Mosleh, Trans. of the National Meeting of ANS, Boston, June 1992
-
- [1988 – 1991]-----
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- C.32 Assessing Plant Safety Performance Using Direct and Indirect Indicators, N. Grossman, M. Modarres, and A. Mosleh, 11th SMIRT Conf., Tokyo, August 1991.
-
- C.31 A New Look at Uncertainty Analysis, M. Amirghasemi and M. Modarres, Proc. of ISUMA'90, 1st Inter. Symposium on Uncertainty Modeling and Analysis, College Park, MD, Dec. 1990.
-
- C.30 Applications of Master Plant Logic Diagram (MPLD) PC-Based Program in Probabilistic Risk Assessment, J.H. Zamanali, M. Modarres, and J. Wang, Inter. Conference on Probabilistic Safety Assessment and Management, PSAM, Beverly Hills, Feb. 1991.

-
- C.29 Direct Evaluation of Systems Using Expert System Technology, M. Modarres, Inter. Conf. on Probabilistic Safety Assessment and Management, PSAM-1, Beverly Hills, Feb. 1991.
-
- C.28 A Method for Evaluation and Integration of Safety Performance Indicators, N. Grossman, A. Mosleh, and M. Modarres, Inter. Conf. On Probabilistic Safety Assessment and Management, PSAM-1, Beverly Hills, Feb. 1991.
-
- C.27 Autonomous Decision-Making Expert System for Fault Administration, L. Chen and M. Modarres, Proc. of Advances in Human Factors Research on Man/Computer Interaction, Nashville, TN, June 1990, pp. 24-30.
-
- C.26 A Knowledge-based Approach to Root-Cause Failure Analysis, M. Modarres, H. Su, R. Hunt, L. Chen, and M. Danner, Proc. of the Expert Systems Applications for Electric Power Industry Conf., Orlando, Fl. June 1989.
-
- C.25 An Expert System for Emergency Response, D. Sebo, D. Marksberry, and M. Modarres, Proc. of the Amer. Nuclear Soc. National Meeting, June 1989.
-
- C.24 RSAS: A Reactor Safety Assessment System, D. Sebo, D. Marksberry, and M. Modarres, Proc. of the 7th Power Plant Dynamics, Control and Testing Symposium, Knoxville, TN, May 1989.
-
- C.23 Toward Building Real-Time Expert System for On-Line Process Disturbance Management Using Model-Based Reasoning, I.S. Kim and M. Modarres, Proc. of the 7th Power Plant Dynamics, Control and Testing Symposium, Knoxville, TN, May 1989.
-
- C.22 Application of the Root-cause Workstation in the Identification of the Causes of Reactor Scram, R.N. Hunt, M. Danner, and M. Modarres, Proc. of ANS Topical Meeting on Engineering for Nuclear Plant Operation and Maintenance, Myrtle Beach, SC., April 1988.
-
- C.21 Development of a Root-Cause Analysis Workstation and its Test Applications, N. Hunt, D. Chung, and M. Modarres, 15th Inter-RAM Conference, Portland, OR, June 1988.
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- [1984 – 1987]-----
-
- C.20 MOAS: A Real-Time Operator Advisory System, I. Kim and M. Modarres, Topical Meeting on Artificial Intelligence and Other Innovative Computer Applications in Nuclear Industry, Snowbird, Utah, Sept. 1987 (Invited).
-
- C.19 MAKE: Maryland Automatic Knowledge Extractor, N. Kapoor, M. Modarres, and T. McAvoy, Presented at the 1987 Amer. Control Conference, Minneapolis, June 1987.
-
- C.18 Performing a Plant Specific PRA by Hand - A Practical Reality, R.N. Hunt and M. Modarres, Presented at the 14th Inter-RAM Conf., Minneapolis, June 1987.
-
- C.17 Application of Goal Tree-Success Tree Model for Real-Time Advisory Systems, M. Modarres, Annual Research Review Conference of Systems Research Center, Univ. of Maryland, Sept. 1986.
-
- C.16 A Method of Fault Diagnosis: Presentation of a Deep-Knowledge System, D. Chung and M. Modarres, Proc. of the Ann. AIChE Conf., NY, NY, Nov. 1987.
-
- C.15 Improving the Performance of Critical Plant Components - An Analytical Approach, R.N. Hunt, M. Modarres, and M.L. Roush, 13th Inter-RAM Conference, Syracuse, N.Y., June 1986.
-
- C.14 An Integral Approach to Analysis of Potential Plant Improvement, M. Modarres, M.L. Roush, R.N. Hunt, and B. Pearce, Amer. Power Conf., Chicago, IL, April 1986.
-
- C.13 The Integrated Approach Methodology for Operator Information Evaluation, R.N. Hunt, M. Roush, M. Modarres, R. Pearce, and K. Stroube, ANS/ENS Topical Meeting on Human Factors, April 1986.
-
- C.12 Uncertainty Analysis with Statistically Correlated Failure Data, M. Modarres, H. Dezfuli, and M. Roush, Int. Atomic Energy Agency Seminar on Implications of Prob. Risk Assessment, Blackpool, UK, March 1985, (Invited).
-
- C.11 Use of The Goal Tree Methodology to Evaluate Institutional Practices and Their Effect on Power Plant Hardware Performance, R.N. Hunt and M. Modarres, ANS/ENS Topical Meeting on Probabilistic Safety Methods and Applications, San Francisco, CA, Feb. 1985.
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- C.10 Application of Goal Trees to Evaluation of the Impact of Information Upon Plant Availability, M.L. Roush, M. Modarres and R.N. Hunt, ANS/ENS Topical Meeting on Probabilistic Safety Methods and Applications, San Francisco, CA, Feb. 1985.
-
- C.9 Application of Goal Trees in Reliability Allocation for Systems and Components of Nuclear Power Plants, M. Modarres, M.L. Roush, and R.N. Hunt, 12th Inter-RAM Conf., Baltimore, Maryland, April 1985.
-
- C.8 Application of Goal Trees for Nuclear Power Plant Hardware Protection, M. Modarres, M.L. Roush, and R.N. Hunt, 8th Int. Conf. on Structural Mechanics in Reactor Tech (SMiRT)., Brussels, Belgium, Aug. 1985.
-
- C.7. Integrated Economic Risk Management in a Nuclear Power Plant Hardware Protection, R.N. Hunt and M. Modarres, 1984 Annual Meeting of Society for Risk Analysis, Oct. 1984.
-
- C.6. A Hierarchical Goal Tree Structure for Containment Integrity, M.L. Roush, M. Modarres, and R.N. Hunt, 2nd Inter. Workshop on Containment Integrity, June 1984.
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- C.5. Application and Extension of the MOCUS-BACKFIRE Common Cause Analysis Code to Reactor Safety Systems, M. Modarres, N. C. Rasmussen, Int. ANS/ENS Top. Meeting on Probabilistic Risk Assessment, Sept. 1981.
-
- C.4. Mathematical Concepts of Time-Dependent Fault Tree Evaluation, M. Modarres and N.C. Rasmussen, International ANS/ENS Topical Meeting on Probabilistic Risk Assessment, Sept. 1981.
-
- C.3. Monte-Carlo Simulation by the PL-MODMC Code, M. Modarres, N.C. Rasmussen, and L. Wolf, Trans. of Amer. Nuclear Soc., 35, pp. 395-396, 1980.
-
- C.2. Automatic Reduction of Complex Fault Trees by PL-MODT, M. Modarres, N.C. Rasmussen and L. Wolf, Trans. of Am. Nuclear Soc., Vol. 30, pp. 362-363, 1978.
-
- C.1. PL-MODT: A Modular Fault Tree Analysis and Transient Evaluation Code, M. Modarres, N.C. Rasmussen and L. Wolf, Trans. of American Nuclear Sec., 29, pp. 510-511, 1979.
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NUREG & Other National Lab. Reports (Author or Coauthor)

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- G.9 Technical Basis for Regulatory Guidance on the Alternative PTS Rule (10 CFR 50.61a), Gary L. Stevens, Mark T. Kirk. Mohammad Modarres, NUREG-2163, U.S. Nuclear Regulatory Commission (2014).
-
- G.8 Individual Plant Examination: Submittal Guidance, NUREG-1335, Consultant Co-Author, U.S. Nuclear Regulatory Commission, Jan. 1989.
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- G.7 US regulatory commission: a framework and method for the amalgamation of performance indicators at nuclear power plants. Wreathall J, Schurman DL, Modarres M, Anderson N, Roush ML, Mosleh A. Report NUREG-5610, vols. 1 and 2, US Nuclear Regulatory Commission, Washington, DC, USA, 1992.
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- G.6 Integrated Approach Methodology Handbook: A Handbook for Power Plant Assessment, M. Roush, M. Modarres, N. Hunt, D. Krops and R. Pearce, Sandia National Laboratories, Sand-87-713b, Oct. 1987.
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- G.5 Application of an Operator Information System Analysis to the Calvert Cliffs Nuclear Plant - Unit I, M. Roush, M. Modarres, et al., Sandia National Laboratory, ALO-1023, May 1984.
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- G.4 Interim Reliability Evaluation Program: Analysis of the Calvert Cliffs Unit I Nuclear Power Plant - Unit I, M. Roush, M. Modarres, et al., U.S. Nuclear Regulatory Commission, NUREG/CR-3511, March 1984.
-
- G.3 Interim, Reliability Evaluation Program: Analysis of the Millstone Unit I Nuclear Power Plant, P.J. Amico, M. Modarres, et al., U.S. Nuclear Regulatory Commission, NUREG/CR-3511, March 1984.
-
- G.2. Sequence Quantification Chapter, Section 6.5, (M. Modarres, author), in “PRA Procedures Guide”, U.S. Nuclear Regulatory Commission (NUREG/CR-2300), 1983.
-
- G.1. A User’s Guide for MODCUT and PL-MODMC: Computer Codes for Fault Tree Analysis, M. Modarres, N.C. Rasmussen, and L. Wolf, U.S. Nuclear Regulatory Comm., NUREG/CR-1461, Nov. 1980.
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Other Significant Technical Reports

-----[2000 – 2004]-----	
O.12	Food Safety Risk Communication Primer, N. Eisenberg, B. Silverberg, M. Modarres, Center for Technology Risk Studies, June 2001.
-----[1995 – 1999]-----	
O.11	Integrated Risk and Performance-Based Analysis Software: Phase-I Development, M. Modarres, H. Hadavi, and T. Wu, Empire State Energy Research Corporation, Report EP 97 - 11, May 1999.
O.10	Integrated Thermal Hydraulic Analysis and Probabilistic Assessment for Safety Evaluation and Scenario Screening of the AP600 Reactor, Y. Guan, F. Li, R. Alamsyah, and M. Modarres, Sciencetech, Inc. and NRC, May 1998.
O.9	A Method of Assessing Influence of Organization on Plant Safety with Application to Performance Indicator Evaluation, A. Mosleh, M. Modarres, E. Golfeiz, U.S. NRC, 1997.
O.8	Consideration of Uncertainties in Risk-Informed Decisions, M. Modarres, A. Mosleh, Prepared for the US Nuclear Regulatory Commission, October 1997.
O.7	Functional Specifications for a PRA-Based Decision-Making Tool, Fl. Specter, M. Modarres, Empire State Electric Energy Research Corporation, Report No. EP 95-14, April 1996.
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O.6.	Application of Master Plant Logic Diagram in New Production Reactors, J. Meyer, H. Dezfuli, D. Chung and M. Modarres, Sciencetech, Inc., Performed for the Department of Energy, 1991.
-----[1983 – 1987]-----	
O.5.	Light Water Reactor Categorization Report, M. Modarres, E. Lois and P. Amico, Performed for Martin Marietta Energy Systems, Oak Ridge National Laboratory, 1984.
O.4.	A Review of the Report: Precursors to Potential Severe Core Damage Accidents: 1969-1979, Performed for Martin Marietta Energy Systems, Oak Ridge National Laboratory, Univ. of Maryland, College Park, 1983.
-----[1978 – 1982]-----	
O.3.	MOCUS-BACKFIRE User's Manual, C.D. Heising, R. Karimi, C. Mark, M. Modarres, N. C. Rasmussen, and L. Wolf, MIT Energy Laboratory Report No. MIT-EL-81-034, Nov. 1981.
O.2.	Reliability Analysis of Complex Technical Systems Using the Fault Tree Modularization Technique, M. Modarres, MIT Dept. Of Nuclear Engineering Report, MITNE-228, Jan. 1980.
O.1.	PL-MODT and PL-MODMC, Two Codes for Reliability and Availability Analysis of Complex Technical Systems Using the Fault Tree Modularization Technique, M. Modarres and L. Wolf, MIT Dept. of Nuclear Engineering Report, MITNE-222, Nov. 1978.

8. SUPERVISION OF GRADUATE STUDENTS AND POSTDOCS

Ph.D. Current

Saman Marandi (LLM-Informed Functional Modeling for Diagnostics)
 Eunseo So (AI-Informed Reliability Test)
 Yasamin Ghahremani (Multi-Agent Physics of Failure)
 Stephen Izon (Probabilistic Physics of Failure Test Optimization)

Reliability Engineering
 Reliability Engineering
 Reliability Engineering
 Reliability Engineering

M.S. (with thesis) Current

None

Ph.D. Completed

51. Joy Shen A Monte Carlo Augmented Bayesian Network Approach to Developing Hybrid External Flood Probabilistic Risk Assessments (Reliability Engineer at the Intuitive Corp.), (Co-Advisor, M. Bensi Advisor).
50. Hamidreza Habobollahi, 2024 Physics-Informed Deep Learning Framework for Probabilistic Modeling of Environmentally Induced Degradation (Reliability and ML Engineer with Google)
49. Neda Shafiei, 2022 Estimating Reliability of a New Consumer Product Using User Survey Data and Reliability Test Data (Senior Reliability Engineer at Rivian) (J. Herrmann Co-Advisor).
48. Sergio Cofre, 2022 A Physics-Informed Neural Network Framework for Big Machinery Data in Prognostics and Health Management for Complex Engineering Systems, (Reliability and Machine Learning Engineer, Intuitive Corp.) (E. Drogue Co-Advisor).
47. Foad Karimian, 2021 Thermodynamic and Information Entropy-Based Prediction and Detection of Fatigue Failures in Metallic and Composite Materials Using Acoustic Emission and Digital Image Correlation (Reliability Engineering Leader, Tesla Corp.) (Co-Advisor Hugh Bruck).
46. Paul Nation, 2021 Bayesian Methodology for Reliability Growth Planning and Projection for Discrete-Use Systems Utilizing Multi-Source Data (Retired Senior RAMS Engineer, Australian Department of Defense).
45. Jonathan DeJesus, 2021 A Bayesian Network Perspective on The Elements of a Nuclear Power Plant Multi-Unit Seismic Probabilistic Risk Assessment (Staff member, Nuclear Regulatory Commission) (Co-advisor, Advisor, M. Bensi).
44. Amin Aria, 2020 Cost-effective Prognostics and Health Monitoring of Locally Damaged Pipelines with High Confidence Level (Emerging Technologies Lead at ARETUM Labs) (S. Azarm Co-Advisor).
43. David Verstraete, 2019 Deep Adversarial Approaches in Reliability (Principal data scientist - For Motor Company, MI, USA), (E. Drogue, Co-Advisor)
42. Huisung Yun, 2019 Entropic Approaches for Assessment of Metal Fatigue Damage (Currently a Major in ROK Army, South Korea).
41. Taotao Zhou, 2018 Development of Approaches to Common Cause Dependencies with Applications to Multi-Unit Nuclear Power Plant (Currently, Associate Professor, China University of Petroleum-Beijing), (E. Drogue Co-Advisor).
40. Reuel Calvin Smith, 2017 Framework for Small Crack Propagation and Detection Joint Modeling Using Gaussian Process Regression (Currently Adjunct Instructor, Reliability Engineering, University of Maryland).
39. Elaheh Rabiei, 2016 Damage Precursor Based Structural Health Monitoring and Prognostic Framework Using Dynamic Bayesian Network (Senior Reliability Data Scientist/Applied Scientist · Samsara), (E. Drogue Co-Advisor).

38. Anahita Imanian, 2015 An Entropic Theory of Damage with Applications to Corrosion-Fatigue Structural Integrity Assessment (Currently AI Leader with the MITRE Corp.)
37. Katherine E. Gromek, 2015 Agent Autonomy Approach to Probabilistic Physics-Of-Failure Modeling of Complex Dynamic Systems with Interacting Failure Mechanisms (Currently a PRA Technical Specialist for Canadian Nuclear Safety Commission).
36. Omer Yousif, 2015 Mechanistic-Based Design Integrated Reliability Validation Framework for Mechanical Systems (Currently Systems Reliability, & Risk-based Design Engineer with Google).
35. Abdallah Al-Tamimi, 2014 Improved Probabilistic Remaining Useful Life Estimation in Engineering Structures: Modeling Multi-Site Fatigue Cracking (R&D Manager, ADNOC oil company, UAE).
34. Chonlagarn Iamsumang, 2014 Computational Algorithm for Dynamic Hybrid Bayesian Network in On-Line System Health Management Applications (Research Office of Thai Atomic Energy Commission) (Prof. Ali Mosleh Co-Advisor).
33. Azadeh Keshtgar, 2014 Acoustic Emission-Based Structural Health Management and Prognostics Subject to Small Fatigue Cracks (Staff Engineer, DC Metro, Washington, DC).
32. Victor Ontiveros, 2014 Strain Energy and Thermodynamic Entropy as Prognostic Measures of Crack Initiation in Aluminum (Staff Engineer, Hughes Associates Inc.)
31. Martin Wayne, 2013 Methodology for Assessing Reliability Growth Using Multiple Information Sources (Lead Reliability, U.S. Army, AMSAA).
30. Seymour Mandelcorn, 2013 An Explanatory Model of Motivation for Cyber-Attacks Drawn from General Crime Theories (Computer Security Specialist University of Maryland). (Co-Advisor A. Mosleh)
29. Kaushik Chatterjee, 2011 A Probabilistic Mechanistic Approach for Assessing the Rupture Frequency of Small Modular Reactor Steam Generator Tubes Using Uncertain Inputs from In-Service Inspections (FM Global, MA, USA).
28. Masoud Rabiei, 2011 A Bayesian Framework for Structural Health Management Using Acoustic Emission Monitoring and Periodic Inspections (Hardware Data Scientist, Waymo Corp.)
27. Donald E. Hall, 2009 Modeling and Validation of Dosimetry Measurement Assumptions Within the Armed Forces Radiobiology Research Institute TRIGA Mark-F Reactor and Associated Exposure Facilities Using Monte Carlo Techniques (Currently, Colonel, Deputy Director of the Armed Forces Radiobiology Research Institute).
26. Mohamad A. Chookah, 2009 Structuring a Probabilistic Model for Reliability Evaluation of Piping Subject to Corrosion-Fatigue Degradation. (Currently Executive Director of R&D and Fuel Cycle, Emirati Nuclear Energy Corporation, UAE).
25. Reza Azarkhail, 2007 Agent Autonomy Approach to Physics-Based Reliability Modeling of Structures and Mechanical Systems. (Currently, Manager Reliability Engineering, Intuitive

Corporation)

24. Genebeline Valbuena, 2007 Probabilistic Models to Estimate Fire-Induced Cable Damage at Nuclear Power Plants. (Currently with Manager of Reliability Group.)
23. M. Pour Gol-Mohamad, 2007 Integrated Methodology for Thermal-Hydraulics Uncertainty Analysis (Co-Adviser A. Mosleh) (Currently Adjunct Associate Professor, UMD, also with Teradyne Inc.).
22. Jose Hurtado, 2006 Airframe Integrity Based on Bayesian Approach (Marathon Petroleum, San Antonio, TX).
21. Kristine Fretz, 2006 Engineering-Based Probabilistic Risk Assessment for Food Safety with Application to E. coli O157:H7 Contamination in Cheese (currently Managing Executive for the Space Exploration Johns Hopkins Applied Research Lab.)
20. Samuel Chamberlain, 2004 Development of a Physics of Failure Model and Quantitative Assessment of Fire Fatality Risk of Compressed Natural Gas Bus Cylinders. (Industrial Products Group Reliability Specialist and Area Manager, ITT Industries).
19. Chi Yeh, 2003 System Modeling and Root Cause Failure Analysis Expert System. (Retired as Systems Engineering & Integration Branch, NASA, Glenn Research).
18. Fei Li, 2001 Assessment of Pressure Vessel Failure Due to Pressurized Thermal Shock with Consideration of Probabilistic-Deterministic Screening and Uncertainty Analysis (Currently, Principal Reliability Engineer, China)
17. Francisco Joglar, 2000 A Methodology for Fire Risk and Hazard Assessment. (Currently, Senior Consultant, Jensen Hughes, Inc.)
16. Vasilii Krivtsov, 2000 A Monte Carlo Approach to Modeling and Estimation of the Generalized Renewal Process in Repairable System Reliability Analysis. (Currently, Corporate-Wide Technical Advisor for Reliability, Ford Motor Company).
15. M. Hadi Hadavi, 1998 Risk and Performance-Based Techniques in System Health and Maintenance Monitoring. (Currently Senior PRA Engineer, Duke Energy, NC).
14. James O'Brien, 1998 Methodology for Modeling System Evolution to Support Decision making With Application in Severe Accident Management. (Currently, Nuclear Safety, DOE).
13. Yue Guan, 1998 A Method of Integrating Thermal Hydraulics-Probabilistic Assessment for Safety Analysis and Screening with Applications to the AP600 Reactor. (President and CEO, Advanced System Technology Management, Inc.)
12. Kamredding Ouliddren, 1998 Automated Fuzzy Logic-Based Learning Using Dynamic Master Logic Diagram (Served as mentor, A visiting student graduated from the University of Brussels, Belgium) (Currently, Nuclear Research Centre SCK-CEN).
11. Toni Ni, 1997 Development of Partial Failure Analysis Method in Probabilistic Risk Assessment. (Currently, Shanghai University, China).
10. Atossa Thunem, 1997 Functional Modeling Using Joint GTST-MFM Approaches (Advised by Prof.

- Morten Lind of Technical University of Denmark (DTU)--served as a mentor while visiting from DTU).
9. J. K. Won, 1995 Modeling and diagnosis of equipment partial failures in process plants.
 8. Yu-Shu Hu, 1994 Evaluating System Behavior through Dynamic MLD Modeling. (Currently, Professor, Taiwan's National Chiao Tung University)
 7. Lawrence Hammersten, 1991 Assessment of the effect of degraded equipment failures and untimely operator actions on nuclear plant safety. (Currently, Retired Research Analyst, MITRE Corp.)
 6. Liun Chen, 1990 A hierarchical decision process for fault administration (Currently, Senior Vice President, Bank of America)
 5. Jayning Wang, 1990 Development of an AI-based program for process safety evaluation.
 4. Donald T. Chung, 1988 A correlation model to analyze dependent failures for probabilistic risk assessment. (Currently, Retired as the Senior Staff Member with U.S. NRC).
 3. Inn Seok Kim, 1988 A model-based approach to on-line process disturbance management. (Currently, Retired as the President, International System Safety Analysis (ISSA) Technology, Inc.)
 2. Homayoon Dezfouli, 1985 Real-time expert system for fault detection and failure prevention and applications. (Currently, NASA Fellow, HQ).
 1. Erasmia Lois, 1985 A class specific approach to nuclear power plant safety studies with applications. (Currently, Retired as a Senior Staff Member, U.S. NRC).

M.S. with Thesis completed (Total of 42)

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|----------------------------|--|
| Sara Lyons, 2020 | A Probabilistic Risk Assessment Based Approach to Understanding and Managing Risks of Natural Gas Distribution Piping in the United States. |
| Adam Barrett, 2017 | An Investigation of the Effects of External Conditions on the Reliability of Aircraft Inspections. |
| Dan Hudson, 2016 | U.S. Nuclear Regulatory Commission Safety Goals: Policy Implications of Expanding Scope to Include Risk Contributions from Concurrent Accidents Involving Multiple Units at a Shared Nuclear Power Plant Site. |
| Christine Sauerbrunn, 2016 | Evaluation of Information Entropy from Acoustic Emission Waveforms as a Fatigue Damage Metric for Al7075-T6. |
| Fatmagul Ibisoglu 2013 | A Probabilistic Physics of Failure Model for Creep-Fatigue in An Austenitic Stainless Steel. |
| Suzanne Schroer 2012 | An Event Classification Schema for Considering Site Risk in a Multi-Unit Nuclear Power Plant Probabilistic Risk Assessment. |
| David Johnson 2011 | Application of Stochastic Reliability Modeling to Waterfall and Feature Driven |

	Development Software Development Lifecycle (Co-Advisor C. Smidts).
Gary Wu 2011	A probabilistic-mechanistic approach to modeling stress corrosion cracking propagation in Alloy 600 components with applications.
Oud R 2011	Classification and Probabilistic Model Development for Creep Failures of Structures: Study of X-70 Carbon Steel and Al-7075-T6 Alloys.
Marc Montemerlo 2010	Reliability Assessment and Fatigue Fracture Studies on Al-7075.
Danny Cheng 2010	Bayesian Belief Network and Fuzzy Logic Adaptive Modeling of Dynamic System: Extension and Comparison.
Maria Amoedo 2006	A Structured Methodology for Identifying Performance Metrics and Monitoring Maintenance Effectiveness.
Carlos E. Barroeta 2005	Inspection interval optimization in periodically tested components
Desmond St. Rose 2005	Reliability of SAS Actuators for Helicopter.
Albert Wong 2005	A Proposed Risk-Informed Decision-Making Process for Material and Waste Applications.
William Keller 2004	A Historical Overview of Probabilistic Risk Assessment Development and Uses in the Nuclear Power Industry.
Erin Mack 2004	Fire Protection System Reliability.
Daniel Yates 2004	Medical ODIC Sensor System: Reliability Assessment.
Tong Fang 2003	Pressurized Thermal Shock Modeling Uncertainties.
W. Baun 2002	Applicability of the Norris-Landzberg Accelerated Thermal Cycling Model to Gold-Tin Eutectic Solder.
K. Fretz 2000	Risk Assessment of <i>Salmonella Enteritidis</i> in Shell Eggs and Egg Products.
A. Alvarez 1999	Maintenance and Inspection Intervals Based on Statistical Analysis of Failure Data.
X. Wu, 1998	Operation Control and Monitoring Expert System.
C. Lam, 1998	Automation of Failure and Effect Analysis for Automotive Industry.
R. Alamsya 1998	Human Action Modeling for AP-600 Reactor.
J. Stone 1998	Contribution of Shutdown Risk to Overall Core Damage Frequency at U.S. Nuclear Power Plant.
J. Fama 1997	Functional Specifications of Software Package for Root-Cause Failure Analysis.

S. Kumar 1997	Development of OSES.
W. Wang 1994	Artificial Neural Networks and Their Application.
E. Soter 1993	Protective Coatings as a Means of Reliable Corrosion Prevention.
D. Yeh 1991	Application of RC-Expert: GTST model to analyze root-causes of reactor scrams.
A. Amirghasemi 1990	A new look at uncertainty analysis.
Y. Guan 1990	Review of the reliability analysis techniques.
D. Koo 1989	D/Boolean applications in reliability analysis.
M. Middleton 1988	Goal tree analysis modeling of localized corrosion and fatigue failure modes.
L. Abbott 1988	Consistency checking during automatic knowledge acquisition for expert system development.
M. Cheok 1988	Plant Health Indicator Studies.
K. Kafie 1987	Development of the PC-Based version of CORRELATE.
D. Rathbun 1987	Development of safety goals for nuclear power plants.
C. Klee 1986	Plant categorization study of U.S. LWRs licensed 1979-1985.
F. Nouri 1985	Probabilistic cost-based method for reactor operational improvement.
H. Dezfuli 1983	Uncertainty analysis with correlated failure data.
C.H. Mak 1981	(MIT student) Development and application of the MOB code.

Postdoctoral and Scholar Fellows

Ali Kahirdeh (IAI+Engineering)	2015-2018	Sai Zhang (INL)	2016-2016
Mehdi Amiri (Associate Prof. George-Mason-Univ.)	2012-2014	Gyunyoung Heo	2013-2013
Kaushik Chatterjee	2012-2012	T-C.Wu	1998-1999
Zahra Mohaghegh (Professor Univ. of Ill, Urbana Champaign)	2011-2012	S.W. Cheon	1997-1998
Shunpeng Zhu (Professor, Univ. of Electronic Science & Technology, China)	2010-2011	N. Kececi	1997-2004
M. Reza Azarhkail (Inuit)	2007-2009	K-S. Hsueh	1996-1998
Xiangyu Wang	2005-2008	A. Jalashgar	1996-1997
Zou Xiaoli	2000-2001	R. Irehvije	1994-1995
J.L. Hurtado	2004-2006	K. Ouliddren	1994-1995
H. Hadavi	1998-1999	D. Yeh	1988-1989

9. KEYNOTE AND INVITED TALKS

Keynote & Plenary Talks (From 2011 to Present):

Risk and Reliability in a Changing World- Honorary Doctorate Lecture Da Vinci University, Guatemala, April 10, 2025.

WASH-1400- Reactor Safety Study (AKA-Rasmussen Study) 50th Anniversary, Opening Plenary of the 19th International Conference on Probabilistic Safety Assessment and Analysis (PSA 2025), June 16, 2025.

Small Modular Nuclear Reactors - Challenges and Opportunities, Keynote at the Workshop on Powering AI: Is Nuclear the Answer? Environmental Sciences & Policy Programs, University of Maryland, 17 April 2025

Circular Economy and Durability: Implications for Future of Reliability Engineering, Workshop on Implications and Experiences in Establishing and Using Product Durability Concepts at the RAMS-2023, January 27, 2023, Orlando, FL.

A Quick Overview of GTST Functional Modeling, Technical University of Denmark, DTU, Workshop on Functional Modeling, 7 August 2023

Probabilistic Risk Assessment: Frontiers and Prospects (virtual), College of Safety and Ocean Engineering China University of Petroleum-Beijing (CUP), November 1, 2022.

Fundamental Sciences of Reliability, Distinguished Speaker Series on QRAMS for Academicians and Practitioners, Subir Chowdhury School of Quality and Reliability, IIT Kharagpur, India, February 12, 2022.

Research Frontiers in Probabilistic Risk Assessment, (Virtual Plenary Talk) ABRISCO 2021 Congress Brazilian Association of Risk Analysis, Process Safety and Reliability, 23 November 2021.

Reliability Engineering: Today and Beyond, Keynote (Virtual Talk) at the 6th Annual Conference of the Institute for Quality and Reliability, Tsinghua University, People's Republic of China. Oct. 2020

Advances in Probabilistic Physics-of-Failure, Keynote Invited talk at the Well Engineering Reliability Workshop, Rio de Janeiro, Brazil, 5 December 2019.

What's Accomplished and What's Remained in Multi-Unit PSA Methods and Applications, Keynote talk at the Technical Meeting on the Multi-unit Probabilistic Safety Assessment, IAEA, Vienna, Austria, 7 October 2019.

A Machine Learning Approach to Integrity Management of Pipelines, Keynote Talk at the SPE Workshop: Digital Asset Integrity Management (D-AIM), Abu Dhabi, UAE, 8 April 2019.

Some Misconceptions About Multi-Unit PSAs, Plenary Talk, OECD/NEA Committee on the Safety of Nuclear Installations (CSNI), Working Group on Risk Assessment (WGRISK), International Workshop on Status of Site Level PSA Developments, Munich, Germany, July 18, 2018.

An Outline of MUPSA Risk Metrics, Safety Goals and Risk Information, Keynote Talk, OECD/NEA Committee on the Safety of Nuclear Installations (CSNI), Working Group on Risk Assessment (WGRISK), International Workshop on Status of Site Level PSA Developments, Munich, Germany, July 20, 2018.

MUPSA Methodology Future Developments and Safety Goals, Keynote Presented at the IAEA Consultancy Meeting on Multi-Unit Probabilistic Safety Assessment, Vienna, Austria, 16 October 2017.

MUPSA Aggregation and Safety Goals Consideration, Keynote Talk at the IAEA Consultancy Meeting on Multi-Unit Probabilistic Safety Assessment, Vienna, Austria, August 1, 2017.

MU-PRA Metrics and Safety Goals Implication, Keynote Talk Presented at the IAEA Meeting on Multi-Unit Probabilistic Safety Assessment, Vienna, Austria, 24 April 2017.

MU-PRA Methodology, Safety Goals Implication, Current Research at UMD, Keynote Presented at IAEA Meeting on Multi-Unit Probabilistic Safety Assessment, Vienna, Austria, December 14, 2016.

Small Crack Fatigue Growth and Detection Modeling with Uncertainty and Acoustic Emission Application, Keynote Talk Presented at ITISE 2016 Conference, Granada, Spain, June 26, 2019.

Probabilistic Risk Assessment and Management in the Nuclear Industry: Overview and Applications, Keynote Presented at Meeting on Nuclear Energy and Cyber Security, U.S. Naval Academy, 18 April 2016.

Frontiers of Risk and Reliability Engineering Research, Plenary Keynote Talk, ASME-IMECE2015 Conference Houston, Texas, October 19, 2015

Significance of Multi-Unit Nuclear Plant Risks and Implications of the Site-Level Quantitative Health Objectives, Invited Keynote Lecture at the IEA/OECD International Workshop on Multi-Unit Probabilistic Safety Assessment, Ottawa, Canada, November 17, 2014.

Nuclear Safety at Calvert Cliffs: Review of Issues Arising from the Japanese Accident, Keynote Talk at the League of Women Voters Nuclear Forum, Calvert Marine Museum, Solomons, Maryland, October 6, 2011.

The NuScale Reactor Design, Keynote Lecture at the IMF's US-China Green Development Symposium, International Monetary Fund (IMF), Washington D.C., June 10, 2011.

Panel & Invited Talks (From 2010 to Present)

Sustainability, Circularity and Durable Products, IMECE-2025 Special Panel on Reliability and Sustainability: Mutual Benefits, November 19, 2025

Sustainability Through Circular Durable Products, Panel on Advances Product Sustainability, RAMS 2025, January 30, 2025.

Implications and Experiences in Establishing and Using Product Durability Concepts, Presentation at the RAMS-2023 Workshop on Product Durability, January 26, 2023.

Circular Economy and Durability: Implications for Future of Reliability Engineering, Presentation at the RAMS-2023: Consumer Electronics Panel, January 26, 2023

Overview of Probabilistic Risk Assessment, Invited Lecture, Sid and Reva Dewberry Department of Civil Environmental and Infrastructure Engineering, Volgenau School of Engineering, George Mason University, April 25, 2022

Panel on Deep Learning in R&M: Challenges, Opportunities and Future Perspective. The 68th Annual Reliability and Maintainability Symposium, Tucson AZ 24, January 2022.

Multi-Unit PRA Overview & Needs for More Research, Panel on Multi-Unit PRA Advances, Issues, Impediments and Promise, 11 November 2021 (Panel Chair)

Safe and Clean Nuclear Power: A path to No Carbon Future, Invited Seminar Talk, University of Maryland School of Architecture, 20 April 2021.

Sustainable, Safe and Clean Nuclear Energy, Lecture Presented at the Sustainability Course, University of Maryland, 21 April 2020

Summary Workshop on Safety and Risks of Autonomous Vehicles, Panel on Advancing Safety Technologies for Autonomous Vehicles, United States Congress, Rayburn House Office Building, October 30, 2019.

Reliability Science, Entropy and Applications to Corrosion-Fatigue, Invited Talk Presented at Department of Civil, Structural and Environmental Engineering Seminar, University at Buffalo, October 25, 2019.

Characterization and Quantification of Uncertainties in Probabilistic Fracture Mechanics with Applications to Probability of Detection and Sizing of Flaws and Cracks, Invited Talk at the 3rd International Seminar on Probabilistic Methods for Nuclear Applications, Rockville, MD, 23 October 2019.

R&D Prioritization, Panel on Risk Informed R&D Prioritization: Near-Term and Long-Term Needs, American Nuclear Society, Probabilistic Safety Assessment Topical Meeting- PSA2019 Charleston SC, April 29, 2019.

Role of Universities in Keeping PRA a Vital Workforce, Panel Presented at the American Nuclear Society, Probabilistic Safety Assessment Topical Meeting- PSA2019 Charleston SC, April 30, 2019.

Lessons from the Nuclear Risk-Informed Assessments, Invited Talk at the Workshop on Autonomous Vehicles: Issues and Future Directions, College Park, MD, April 24, 2019.

Entropy as an Indication of Damage in Engineering Materials, Invited Talk, Presented at the Entropy 2018: From Physics to Information Sciences and Geometry, Barcelona, Spain, 16 May 2018.

MUPRA Advances Issues, Impediments, and Promise, Panel Presented at PSA2017, Pittsburgh, PA, September 25, 2017 (Panel Chair).

An Acoustic Emission Approach to Assess Remaining Useful Life of Aging Structures under Fatigue Loading, Invited Lecture Presented at the 4th Multifunctional Materials for Defense Workshop, Arlington, VA, 28 August 2017.

Current Trends in Reliability Engineering Research, presented at the Corporate Seminar, Chevron Company, Houston, TX, July 12, 2017.

Entropic Methods to Study the Evolution of Damage and Degradation of Materials, Invited Talk Presented at the 14th International Conference on Fracture, Rhodes, Greece, 20 June 2017.

Entropic Damage: A New Physics-of-Failure and Prognosis Perspective, Invited Seminar Talk Presented at University of Chile, Santiago, Chile, 30 March 2017.

Characterizing Uncertainty of Engineering Events: Deterministic Vs. Probabilistic Analysis of Mechanistic Damages and Failures, Invited Panel Speaker, the 29th Annual Regulatory Information Conference (RIC2017), March 15, 2017

Thermodynamics of Damage: A Reliability Engineering Perspective, Invited Seminar Presented at Department of Materials Science and Engineering, UCLA, Los Angeles, CA, February 17, 2017.

Probabilistic Risk Assessment of Multi-Unit Nuclear Power Plant Sites: Advances and Implication on the Safety

Goals, Invited Seminar, Ohio State University, Department of Mechanical and Aerospace Engineering, Columbus, OH, September 14, 2016.

An Acoustic Emission Approach to Assess Remaining Useful Life of Aging Structures Under Fatigue Loading, Invited Talk Presented at the Office of Naval Research, Science, & Technology Meeting on Structural Integrity, September 8, 2016.

Overview of Reliability Engineering and My Current Research, Invited Keynote Talk, Presented at the NSF Workshop on Aging and Failure in Biological, Physical and Engineered Systems, Harvard University, Cambridge MA, May 16, 2016.

Frontiers of Risk and Reliability Engineering Research, Invited 2016 Kececioğlu Lecture, Department of Aerospace and Mechanical Engineering, University of Arizona, Tucson, AZ April 14, 2016

A Generalized Entropic Framework of Damage: Theory and Applications to Corrosion-Fatigue, Invited Talk at the U.S. Navy's Structural Mechanics (TIM 2015) Workshop, Falls Church, VA, 24 June 2015.

Small Fatigue Crack Initiation and Sizing Using Acoustic Emission, Invited talk at the SAMPE North America Conference, Baltimore, Maryland, May 21, 2015.

Risk perspectives and academic research on severe accidents and dynamic simulation-based risk assessment, Invited Panel, American Nuclear Society Topical Meeting NPIC & HMIT 2015, Charlotte, NC February 24, 2015.

Prognostics and Health Management in Petroleum Structures, Invited Talk at the 2015 Plant Maintenance & Reliability 6th Global Praxis Interactive Technology Workshop, Abu Dhabi, UAE, 17 February 2015.

UMD Reliability Engineering Program: Structure, Philosophy, and Activities, Invited Panel Presentation at the RAMS-2015 Symposium, Palm Harbor, FL, 27 January 2015.

University of Maryland Reliability Engineering Curriculum: Structure and Philosophy, Panel Presentation at the RAMS-2014 Symposium Colorado Springs, Colorado, 28 January 2014.

Risk Analysis and Modeling, Invited Talk Presented at the Transportation Research Board's 92d Annual Meeting, Washington, D.C., January 13, 2012.

Safety Aspects of SMRs: A PRA Perspective, Invited Lecture at the D.C. Local Chapter of American Nuclear Society Monthly Dinner, October 25, 2012.

Thermodynamic Assessment of Fatigue Crack Initiation, Invited Lecture Presented to the Army/Navy TIM Workshop, Irvine, CA, July 26, 2012.

Improvements Needed in Nuclear Power Plant Probabilistic Risk Assessments: Lessons Learned from Fukushima, Invited Talk at the Nuclear Power Safety 2011 meeting, Washington D.C. Marriott Wardman Park Hotel, December 9, 2011.

A Probabilistic Physics-of-Failure Approach to Assessment of Frequency of In-Vessel Steam Generator Tube Rupture Accidents in SMRS, Invited Seminar Lecture delivered at the Nuclear Science and Engineering Department, MIT, October 17, 2011.

Bayesian Knowledge Fusion in Prognostics and Health Management—A Case Study, Invited Paper Presented at the MaxEnt-2010, Chamonix, France, July 2010

Risk Assessment Approaches to Managing Weather Extremes in Energy Systems, Invited Lecture, ICTP-IAEA Workshop on the Vulnerability of Energy Systems to Climate Change and Extreme Events, Trieste, Italy, 22 April 2010.

10. NATIONAL SOCIETY MEMBERSHIPS

Life Fellow, American Nuclear Society (ANS)-1995
 Chair, ANS Human Factors Division (1996 - 1997)
 Chair, ANS Human Factors Division AI Committee (1988-1994)
 Chair, ANS Human Factors Program Committee (1990 - 1992)
 Member, Nuclear Installation Safety Division (2016-2019)
 Member, National Standards on Safety Categorization and Design Criteria for Non-Reactor Nuclear Facilities. (2013- 2023).

Life Fellow, Institute of Electrical and Electronics Engineers (IEEE)-2022
 Member, IEEE Reliability Society, 1980-present
 Treasurer, Washington Local IEEE Reliability Society, 1989-1991
 Vice-Chair, Washington Local IEEE Reliability Society, 1991-1992
 Chair, Washington Local IEEE Reliability Society, 1992-1993

Fellow: Asia-Pacific Artificial Intelligence Association (AAIA)-2022

Member, American Society of Mechanical Engineers (ASME)

Member, American Association for Advancement of Sciences (AAAS)

11. MAJOR CONFERENCES AND WORKSHOPS

Organized

Workshop on Implications and Experiences in Establishing and Using Product Durability Concepts, January 27, 2023, at The Florida Hotel and Conference Center in Orlando, Florida

International Workshop on Risk Analysis for Autonomous Vehicles: Issues and Future Directions, College Park, MD, April 26, 2019.

International Topical Meeting on Probabilistic Safety Assessment (PSA-2019), Charleston, SC April 22-26, 2019 (Technical Program Chair). (300 participants).

25th Reliability Engineering Anniversary Symposium: Promise of a Discipline: Reliability and Risk in Theory and Practice, College Park, MD, April 2, 2014.

Nuclear Safety Workshop, (Organized for Department of Energy), Rockville, MD September 2012.

Societal Safety Goal Workshop, Organized for the Institute of Nuclear Energy Science and Technology (INEST) of the Idaho National Laboratory, College Park, MD, March 2012.

Small Modular Reactor Symposium University of Maryland Energy Research Center, April 29, 2011.

Integrated Uncertainty Analysis, (Organized with Prof. A. Mosleh) for the U.S. Nuclear Regulatory Commission), May 19-20, 2009, Annapolis, MD.

International Workshop on Software & System Engineering (IWSSE), Istanbul, Turkey, September 5-9, 2004

(General Chair).

2nd Workshop on Use of Risk Information in Government, Inn and Conference Center, College Park, MD, Dec. 10-12, 2003.

10th International Conference on Nuclear Engineering (ICONE-10) Arlington, VA, April 14-18, 2002 (Technical Program Chair for the Risk and Reliability track). (Over 800 participants).

Use of Risk Information by Agencies of the Federal Government, College Park, March 6-7, 2001.

6th International Functional Modeling Workshop, College Park, MD, August 23 - 24, 2002.

The 2000 American Nuclear Society/European Nuclear Society Winter Meeting, Washington, D.C., November 12 - 17, 2000 (Technical Program Chair) (Over 1200 participants)

8th International Conference on Nuclear Engineering (ICONE-8) "Nuclear Energy in the new Millennium" Baltimore, MD, April 2-6, 2000 (Technical Program Chair for the Risk and Reliability track). (Over 800 participants)

International Topical Meeting on Probabilistic Safety Assessment (PSA'99), Washington, DC, August 22-26, 1999 (Technical Program Chair), (Over 400 participants)

General Chair, 5th International Functional Modeling Workshop, Paris, France, July 1 - 3, 1997.

General Chair, 4th International Functional Modeling Workshop, Athens, Greece, June 20 - 21, 1996.

General Chair, 3rd International Functional Modeling Workshop, Washington, D.C., June 30 - July 1, 1995.

ANS Topical Meeting on Computer-Based Human Support Systems: Technology, Methods and Future, Technical Program Chair, Philadelphia, PA, 25-29 June 1995.

Expert System Development, at ANS Conference on Man-Computer Interactions: Nuclear and Beyond June 10, 1990, Nashville, Tennessee.

Technical Program Committee

ANS National Meetings, Session Chair: 1989 (Atlanta), Nov. 1989 (San Francisco), June 1990 (Nashville), Nov. 1990 (Wash., D.C.), June 1991 (Orlando), June 1992 (Boston), 1995 (San Francisco), 1996 (Washington, D.C.), 1997 (Orlando), 2000 (Washington), 2002 (Washington), 2004 (Washington), 2009 (Washington), 2011 (Washington). Technical program chair, 2000

Technical Program Chair, ANS/ENS International Meeting, Washington, D.C., Nov. 2000, Washington, DC 2011

Member Technical Program Committee, International Conference on Global Environment and Advanced Nuclear Power Plants, Kyoto, Japan, 2003.

Member, Technical Program Committee, PSAM Conference, Member, 1991, 2003, 2005, 2008, 2010.

Member, Technical Program Committee Embedded Topical Meeting on Operating Nuclear Facility Safety, Member, Nov. 2004.

Technical Program Committee, Probabilistic Safety Assessment Topical Meetings: PSA'99 (Committee Chair),

Washington D.C. August 22-26, 1999; (PSA'2002) Detroit, October 2002; (PSA'2005) San Francisco, Sep. 2005; (PSA'2008) Knoxville, September 8-11, 2008; (PSA'2011) Wilmington, NC, March 2011; (PSA'2013), Columbia, SC, September 2013; (PSA'2017), Pittsburg, PA., PSA'2019 (Committee Chair), 28 April – 3 May 2019, Charleston, SC, (PSA'2021), Columbus, Ohio, November 2021, Chicago 2025, Long Beach CA 2027.

Technical Program Committee—Embedded Topical Meeting on Risk Management, American Nuclear Society, November 2009, 2013, Washington, DC.

Scientific Committee, The Thirteenth International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering, Chamonix, France July 4-9, 2010.