

WEDNESDAY 4/9

8:00	Registration and Breakfast – Annapolis Atrium			
9:00	Welcome and Opening Remarks: Ryan Hurley – Regatta Ballroom			
9:10	Plenary Lecture: Brad Boyce, “Microstructural Black Swans and Deep Material Fingerprints” – Regatta Ballroom			
10:10	Coffee Break – Annapolis Atrium			
10:30	Plenary Lecture: Dan Gianola, “High-Throughput Characterization of Materials for Extreme Environments: the Challenge of Microstructure Sensitivity” – Regatta Ballroom			
11:30	Panel Discussion Moderated by Michael Shields (JHU) and Justin Wilkerson (TAMU) – Regatta Ballroom			
12:00	Lunch – Annapolis Atrium			
	Regatta A (MS3) Advanced Experimental Techniques for Extreme Environments (Arezoo Zare, Jacob M. Diamond)	Regatta B (MS10) High-throughput Materials Discovery for Extreme Conditions (Michael Shields, Raymundo Arroyave, Chris Haines)	Regatta C (MS5) Advances in automated, high-throughput, and small-scale characterization of high strain-rate phenomena (Suraj Ravindran, Debjoy Mallick, Ankit Srivastava, Justin Wilkerson)	Surgeon Meeting Room (MS1) Hypervelocity Impact and Ultra-High Strain Rate Behavior (Justin Moreno, Matt Shaeffer, Jacob Rogers)
1:00-1:20	A Technique for High-Temperature Dynamic Kolsky Bar Compression: Application to Ti-6Al-4V (Emily Pittman , Leslie Lamberson, Amy Clarke) <i>Invited speaker.</i>	Efficient Microstructure-Property Exploration with Active Learning and Gaussian Process Regression (Ozge Ozbayram , Tyler Ragan, Tengyuan Hao, Audrey Olivier, Min Zhou, Lori Graham-Brady)	Measurement of Strain Rate Sensitivity at High Strain Rates with Instrumented Indentation Impact Testing (Jacob Hempel , Brady Butler, George Pharr)	Ultra-high strain rate impact behavior in high molecular weight thermoplastics (Jacob Rogers , Charles Pittman, Edwin Thomas, Justin Wilkerson, Thomas Lacy)
1:20-1:40	A Custom High Speed Thermal Imager for Extreme Loading Events (Eric Stang , Xiaoyu Lian, Jacob Rosenstein, Pradeep Guduru)	Physics-constrained Gaussian Processes for Predicting Shockwave Hugoniot Curves (George Pasparakis , Himanshu Sharma, Michael Shields, Lori Graham-Brady)	Delineating inertial and strain-rate hardening effects on dynamic hardness of elasto-viscoplastic materials (Ankit Srivastava)	
1:40-2:00	Micro to macro-ballistics: The Geometric Scale Dependence of Specific Energy Absorption in High-velocity Microprojectile Impact Tests (Ramathanan Thevamaran , Nicholas Jaegersberg, Yasara Dharmadasa, Jizhe Cai)	Virtual melting and microstructure effects in spall failure in single crystal niobium: a molecular dynamics study (William Zummo , Chunyu Li, Alejandro Strachan)	Informing Cold Spray via High Strain Rate Particle Impacts Captured Using Ultra-High-Speed Videography (Elias Timmons , Joseph Stanzione, Mac Haas, Behrad Koohbor, Tristan Bacha)	X-ray study of microjets from grooved tin samples: from unperturbed to highly destabilized edge jets (Jean-René Burie , Céline Aragoncillo do Mingo, Arnaud Sollier, Thibault Le Révérend, Julie Auperin, Bratislav Lukic)
2:00-2:20		Spallation of SiC bicrystals with a symmetric tilt grain boundary (Chunyu Li , Alejandro Strachan)	A High-Throughput LIPIT System for V50 Testing (Daniel Portillo , Michael Heim, Christopher Sorini, Sidney Chocron, Alex Lakocy, Matt Barsotti)	Ejecta characterization during hypervelocity impacts in geomaterials (Sohanjit Ghosh , Jacob Kim, Elizabeth Chua, Colin Goodman, Mark Foster, Ryan Hurley)
2:20-2:40	Real-time observation of twinning, detwinning, and melting in shock-loaded AZ31B-H24 magnesium alloy (Cyril Williams , Debjoy Mallick, Jeff Lloyd, Jonathan Ligda, John Clayton)	Mesoscale Modeling of Microstructural Effects on Inelastic Behavior of High Entropy Alloys (Thomas Ralph , Manish Vasoya, Vahid Attari, Daniel Salas, Ibrahim Karaman, Dimitris Lagoudas)	Development of Laser-Driven Microscale Ballistic Test Apparatus (Alexander Lakocy , Matt Barsotti, Eddie O’Hare, Sidney Chocron, Daniel Portillo, Michael Heim)	Internal Deformation Measurement of an IDOX/Estane Polymer Composite Cylinder under Loading Using Digital Volume Correlation (Hongbing Lu , Ehsan Mehrdad, Pooyan Brandon, Yao Ren)
2:40-3:00	Characterizing dynamic failure around shock-loaded voids via high-speed x-ray imaging and digital image correlation (Tom Pilvelait , Srijan Neogi, David Henann, Pradeep Guduru)	Accelerated Multi-Objective Alloy Discovery through Efficient Bayesian Methods: Application to the FCC Alloy Space (Raymundo Arroyave , Mrinalini Mulukutla, Trevor Hastings, Ankit Srivastava, James Paramore, Ibrahim Karaman)		Bayesian Calibration for High-Velocity Impact Problems through Ensemble-Based Data Assimilation (Rong Jin , Guangyao Wang, KT Ramesh, Xingsheng Sun)

3:00-3:20	Coffee Break – Annapolis Atrium			
	Regatta A (MS3) Advanced Experimental Techniques for Extreme Environments (Arezoo Zare, Jacob M. Diamond)	Regatta B (MS8) Experiments and modeling of geological and infrastructural materials in extreme environments (Mohmad Mohsin Thakur, Brett Kuwik, Lei Yang, Sohanjit Ghosh)	Regatta C (MS5) Advances in automated, high-throughput, and small-scale characterization of high strain-rate phenomena (Suraj Ravindran, Debjoy Mallick, Ankit Srivastava, Justin Wilkerson)	Surgeon Meeting Room (MS1) Hypervelocity Impact and Ultra-High Strain Rate Behavior (Justin Moreno, Matt Shaeffer, Jacob Rogers)
3:20-3:40	Corrosion and Deposition in Flowing Molten Salt (Stephen Raiman) <i>Invited speaker.</i>	Nanoindentation-based characterization of concrete damage due to high-velocity projectile impact (Zhifei Deng)	Computational Homogenization Modeling of Dynamic Fragmentation in Additive-Manufactured Porous Rings (Caleb Foster , Justin Wilkerson, José Rodríguez-Martínez)	Ballistic and shock response of UHMWPE (Minh Lê , Piyush Wanchoo, Jacob Diamond, Justin Moreno, Jason Parker, KT Ramesh)
3:40-4:00	Optimizing data collection and processing workflow for three-dimensional tomography of corroded nuclear structural materials using focused ion-beam microscopy (Trishelle Copeland-Johnson , Mario Matos, Matthew Anderson, Fei Xu, Christopher Bearcroft, Tanner Mauseth)	Effect of fatigue damage on the shock and spall behavior of α Fe and 4340 steel (Scott Turnage , Joseph Indeck)	Microscale direct-impact mechanics of mechanical metamaterials (Jet Lem , Collin DesRoberts, Samuel Figueroa, Steven Kooi, Carlos Portela)	Penetration and Hugoniot Experiments on Rubber (Jacob Diamond , Krithika Balakrishnan, Konrad Muly, Justin Moreno, Matt Shanaman, KT Ramesh)
4:00-4:20		Computational modeling of brittle rocks subjected to very high velocity impact (Lei Yang)	Optimizing the Energy Absorption Capacity of Auxetic Mechanical Metamaterials by Density Gradation (Behrad Koohbor , Matther Heras, Caitlyn Knoerzer, Nicholas Pagliocca)	Exploring the Hugoniot Elastic Limit of Additively Manufactured SiC-based Ceramics at High Temperatures (Lucas Rackers , KT Ramesh, Konrad Muly, Christopher Hansen)
4:20-4:40	The Effect of Prolonged Space Travel on Mission Critical Shuttle Components (Elijah Davis , Khalid Hattar)	Dynamic deformation of granite under multiaxial compression (Xingyuan Zhao , KT Ramesh, Todd Hufnagel)	Elucidating the Molecular Basis of Strength and Damping in Polyurethane-Urea Elastomers (Roland Goh , Gladys Tan, Bryan Lim, Jet Lem, Carlos Portela, Daria Andreeva)	Laser Microflyer Impact Experiments on Silicon Carbide (Konrad Muly , Ahmad Mirzaei, KT Ramesh)
4:40-5:00	Valuable High Energy X-Ray (HEX) and High-Pressure Pair Distribution Function (PDF) Studies Under Extreme Conditions (Xinguo Hong)		Automated Split Hopkinson Bar (Mouliswar Kumaresan , Suraj Ravindran, Vladimir Kornev, Pranav Kartha)	Automated Laser-Driven Plate Impact Experiments to Evaluate Copper Spall Strength Across Grain Size, Orientation, Strain Rate, and Pressure (Piyush Wanchoo , Rohit Berlia, Tim Weihs, KT Ramesh)
5:00	Poster Session / Reception – Annapolis Atrium			
6:30	Dinner on your own			

THURSDAY 4/10

8:00	Thank you breakfast for Symposium Organizers – Annapolis Atrium
8:30	Breakfast – Annapolis Atrium
9:00	Plenary Lecture: Kaushik Bhattacharya, “Data-driven constitutive relations: Multiscale modeling and experimental inference” – Regatta Ballroom
10:00	Coffee Break – Annapolis Atrium
10:30	Plenary Lecture: Ghatu Subhash, “Machine Learning Methods for Material Discovery, Constitutive Behavior, and Defect Detection” – Regatta Ballroom
11:30	Panel Discussion Moderated by Somdatta Goswami (JHU) – Regatta Ballroom
12:00	Lunch – Annapolis Atrium

	Regatta A (MS9) Particle-based Methods for Multiscale and Multiphysics Modeling - Recent Advances (Zhou Lei, Duan Z. Zhang)	Regatta B (MS11) Discrete Matters (Theocharis Baxevanis, Tian [Tim] Chen, Shailendra P. Joshi)	Regatta C (MS4) Machine Learning Applications and Innovations for Computational Material Science (Noah Wade, Ashwini Gupta, Lori Graham-Brady)
1:00-1:20	Recent Advances of Multiscale Modeling and Evaluation of Architected Material Responses to Impact Loading (Zhen Chen)	Uncovering The Mechanics of Architected Materials Under Dynamic Conditions (Carlos Portela , Thomas Butruille, Rachel Sun, Rishi Kommalapati, Jet Lem)	Finite-element-based physics-informed neural networks (FE-PINNs): Application to boundary value problems of solid mechanics (Manish Vasoya , Pranav Sunil, Ryan Sills)
1:20-1:40		Nonlinear Impact Analysis of Mechanical Metamaterials with Reduced Order Models (Alireza Amirkhizi , Weidi Wang, Willoughby Cheney, Erdem Caliskan, Reza Abedi)	HYDRA: Symbolic feature engineering of overparameterized Eulerian hyperelasticity models for fast inference time (Nhon Phan , WaiChung Sun, John Clayton)
1:40-2:00	Higher order homogenization of Direct Numeric Simulation results of a mock plastic bonded explosive (Nathan Miller , Thomas Allard, Richard Regueiro, Fabio Di Gioacchino, Erik Jensen, Pooyan Javadzadeh)	An “effective” macro-hyperelastic description of periodic bistable auxetic surfaces (Theocharis Baxevanis , Emmanuel Sansusthy Tardio, Tian [Tim] Chen)	Scalable Multi-GPU Training of Neural Operators: Advancing Generalization in High-Dimensional Physical Systems (Luis Santos, Dibakar Roy Sarkar , Deane Roehl, Somdatta Goswami)
2:00-2:20	Data-Driven Scale Bridging for Damage in Granular Packings (Eric Bryant, Bozo Vazic , Kane Bennett)	Structural Materials with Engineered Meso-Scale Architectures: A Case Study on Fracture of Lamellar Materials (Mohit Gupta , Hiileinani Dikilato, Eric Strang, Pradeep Guduru)	Optimal metal alloy design for enhanced spall strength using AI driven optimization framework (Ashwini Gupta , Indrashish Saha, Tamer Zaki, Lori Graham-Brady)
2:20-2:40	The Dual-Domain Material Point Method for Triangular Meshes (Zhou Lei , Xiaoyu Zhang, Duan Zhang)	Squishy Granular Mechanics (Jyoti Sonawane , Shailendra Joshi)	
2:40-3:00	Calibration and Validation of a Material Point Method Ceramic Damage Model for Split-Hopkinson Pressure Bar Simulations (Jay Appleton , Michael Homel, Cameron Crook, Richard Regueiro, Henry Tufo, Gus Becker)	Exploring multi material mechanical metamaterials (Shaikeea Angkur, Ethan Biedenstein)	
3:00-3:20	Coffee Break – Annapolis Atrium		
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3:20-3:40	Size and Shape Dependence of Hydrogen-Induced Phase Transformation and Sorption Hysteresis in Palladium Nanoparticles (Xingsheng Sun , Rong Jin)	Flow control of hypersonic shock-wave/boundary-layer interactions using phononic metamaterials (David Restrepo , Juan David Navarro, David Balderas, Christopher Combs)	Automatic Differentiation in Dynamic Topology Optimization (Kevin Korner , Julian Andrej, Rob Rieben, Jon Belof, Will Schill)
3:40-4:00	Discrete Eshelby Inclusions in Amorphous Solids (Evan Willmarth , Weiwei Jin, Dong Wang, Mark Shattuck, Corey Ohern)	An Analysis of Anisotropic Material Failure under Shear and Tension (Neha Arora , Shailendra Joshi)	Physics-Informed Latent Neural Operator for Real-time Predictions of Complex Physical Systems (Sharmila Karumuri , Lori Graham-Brady, Somdatta Goswami)
4:00-4:20	Particle-based meshfree models for predicting the shock propagation through heterogeneous viscoelastic solids (Benjamin Xu , Thomas O’Connor)	Digital Processing of Fabrics from Programmable Knitting (Tian [Tim] Chen)	Non-linear Material Response Prediction Using Diffusion and Neural Operator Models (Purna Vindhya Kota , Meer Mehran Rashid, Somdatta Goswami, Lori Graham-Brady)
4:20-4:40	Material point methods implementable in unstructured meshes and their consistency and accuracy improvements (Duan Zhang , Kyle Perez, Jiajia Waters, Paul Barclay)		Development and Optimization of 4D-Printed Morphing Wings Using Shape Memory Polymer Composites (Yingbo Zhu , Zhangxian Yuan, Feng Zhu)
4:40-5:00			
5:10	Reception – Annapolis Atrium		
5:55	Conference Banquet with speakers – Regatta Ballroom		

FRIDAY 4/11

8:30	Breakfast – Annapolis Atrium		
9:00	Plenary Lecture: Elizabeth Congdon, “Materials Making an Impact: Enabling Missions in Space through Technology System Development” with Q&A Moderated by Angela Stickle (APL) – Regatta Ballroom		
10:00	Coffee Break– Annapolis Atrium		
	Regatta A (MS6) Machine Learning Methods for Structure and Damage Detection (Ghatu Subhash)	Regatta B (MS7) Soft Tissue Mechanics in Dynamic Events: Integrating Finite Element, Multiscale, and Constitutive Modeling Approaches (Tyson Loudon, Reuben Kraft, Amy Dagro)	Regatta C (MS2) Response of Brittle and Quasi-brittle Composites Across Length Scales (Christopher S. Meyer, Kedar Kirane, Reza Abedi)
10:30-10:50	Real-Time Inference of Defects and Impedance Using Deep Operator Networks (Dibakar Roy Sarkar , Somdatta Goswami)	A method to characterize the cavitation pressure of soft matter under superimposed azimuthal shear (Alexandria Trevino , Jacob Rogers, Justin Wilkerson)	Developing Mixed-Mode Traction Laws for Crystalline UHMWPE Fibrils through Molecular Dynamics (Nuwan Dewapriya , John Gillespie Jr., Joseph Deitzel)
10:50-11:10		A High-Rate, Region-Specific Material Characterization of Porcine Brain Tissue using Thin-Layer Inertial Microcavitation Rheometry (Elizabeth Bremer-Sai , Surya Kolluri, Anastasia Tzoumaka, David Henann, Christian Franck)	Exploring the Effects of Temperature, Transverse Pressure, and Strain Rate on the Axial Tensile Behavior of UHMWPE Crystals Using Molecular Dynamics (Nuwan Dewapriya , John Gillespie Jr., Joseph Deitzel)
11:10-11:30	Probabilistic Neural Networks (PNNs) for Modeling Aleatoric Uncertainty in dynamic strength and toughness of 1D heterogeneous materials (Reza Abedi , Colin Furey, Farhad Pourkamali-Anaraki, Alireza Amirkhizi, Christopher Hansen)	Seamlessly Bridging Scales: AI-Driven Numerical Solver for Dynamic Tissue Mechanics (Maryam Hakimzadeh , Wei Wang, Haihui Ruan, Somdatta Goswami)	Microscale Model for Intergranular and Transgranular Damage and Fracture in Polycrystalline Ceramics (Tengyuan Hao , Tyler Ragan, Daniel Olsen, Min Zhou)
11:30-11:50	Deep Learning for Quantitative Dynamic Fragmentation Analysis (Erwin Cazares Gamez , Brian Schuster)	Individualized Morphing of Human Body Models for Biomechanical Analysis in High-G Environments (Ann Reyes , Reuben Kraft)	The length scale dependency of phase field method: and comparison with the crack band model (Reza Abedi , Giang Huynh, Kedar Kirane)
12:00	Lunch – Annapolis Atrium		
1:00	ADJOURN		