# 7th Indian Conference on Applied Mechanics (INCAM 2026)
# Indian Institute of Technology Kanpur
# 9-11 July 2026

**PROGRAM SCHEDULE**

<table>
<tr><th>Time</th><th colspan="2">DAY 1, Thursday (9 July 2026)</th></tr>
<tr><td>09:00 - 9:30</td><td colspan="2">Inaugural Ceremony (Venue: L18, Lecture Hall Complex)</td></tr>
<tr><td>09:30 - 10:15</td><td colspan="2">Plenary Lecture 1: Alwar Memorial Lecture – Prof. R. Narasimhan (Venue: L18, Lecture Hall Complex)<br>Title: Mechanics of fracture of basal-textured magnesium alloys: Experiments and finite element modelling</td></tr>
<tr><td>10:15 - 10:45</td><td colspan="2">Photo Session and Tea Break (L18 Foyer)</td></tr>
<tr><td rowspan="3">10:45 – 13:15</td><td colspan="2">Parallel sessions</td></tr>
<tr><td rowspan="2">Mini-symposium – Advances in Computational Solid Mechanics<br>Venue: L18, Lecture Hall Complex</td><td>Invited Lecture by Prof. Srikanth Vedantam, IIT Madras<br>Title: Constitutively informed particle dynamics: A novel discrete particle modelling approach</td></tr>
<tr><td>Paper IDs: Titles<br>13: Modelling of damage and healing in viscoelastic materials<br>15: Development of a novel numerical meshless method based on Taylor’s series<br>17: Computational Investigations on high-density polyethylene-aluminium foam sandwich barriers for mitigation of sympathetic detonation<br>23: Viscoelastic materials damage modelling<br>27: Atomistic perspectives on the influence of re distribution on the glide characteristics of screw dislocation in W-Re alloy and its impact on yield behavior<br>30: Fatigue-induced damage in viscoelastic materials</td></tr>
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| | | 36: Experimental investigation of a low speed stability control system for an E-bike using active steering and adjustable wheel base<br>66: A Variational Asymptotic Framework for the Homogenization of the Heterogeneous Plates |
| | **Mini-symposium - AI and HPC for Applied Mechanics**<br>Venue: L8, Lecture Hall Complex | Invited Lecture by **Prof. Rishita Das, IISc Bangalore**<br>Title: Machine learning for turbulent flows: From super-resolution to extreme events prediction |
| | | Paper IDs: Titles<br>11: Hybrid neural surrogate modeling for a data-driven turbofan engine digital twin<br>41: Accelerating learning of crystal plasticity using fourier neural operator<br>59: Learning resonance-driven crack evolution in a Warren girder using deep neural networks<br>109: Tracking error for adaptive training of non intrusive reduced order models: Data driven approaches<br>117: A PINNs based solution of heat transfer through longitudinal fin under temperature dependent parameters<br>126: Spatiotemporal stress–strain fields prediction using DIC and deep learning<br>139: Epileptic seizure classification using hybrid DenseNet - ViT based deep learning model<br>152: A comparative case study on machine learning and ensemble modelling under sparse data conditions in predicting fracture toughness in bio-nanocomposites |
| | **Mini-symposium - Fatigue and Fracture**<br>Venue: L9, Lecture Hall Complex | Invited Lecture by **Prof. Gaurav Singh, IIT Delhi**<br>Title: State of stress in the crack-tip region: Theory, experiments and simulations<br>Paper IDs: Titles |

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| | | 4: Synergistic application of digital image correlation and acoustic emission for Mode I fracture assessment of steel fiber reinforced concrete<br>22: Influence of analysis methodology on fatigue life prediction of offshore structures<br>63: Elastoplastic fracture toughness of amorphous solids at the atomistic scale<br>65: Mechanics of crack interaction between parallel edge crack using near-tip SIF<br>69: The impact of microstructural features on hydrogen permeation in dual-phase steels<br>74: Influence of crack representation on near-tip stress fields in AT2 phase-field fracture for SENT specimens<br>77: Stress intensity factors for the double internal cracked Brazilian disk under diametral compression<br>78: A structural tensor-driven phase-field approach for fracture in composite laminates |
| | **Mini-symposium – Mechanics in Bio-applications and Sports**<br>Venue: L12, Lecture Hall Complex | Invited Lecture by **Prof. Jaywant Arakeri, IISc Bengaluru**<br>Title: Fluid mechanics of fish-like locomotion |
| | | Paper IDs: Titles<br>33: Non-Linear statistical shape modelling of the femoral shaft using anatomically consistent correspondence<br>35: Quantifying the biomechanics of various classical and Western dance postures among skilled individuals<br>43: Analysis of experimentally recorded surface electromyography signals with varied muscle fiber type proportions using sample entropy<br>49: Mathematical modeling and generation of surface electromyogram signal of calf muscles<br>50: Spatial energy feature based seizure prediction using scalp EEG signals<br>52: Region-wise multi-stage assessment of Alzheimer's disease using radiomics-driven structural network analysis |

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| | | 53: Biomechanical evaluation of clavicle fracture fixation: a parametric study of implant material and thickness on healing outcomes<br>61: Design and simulation of hydroxyapatite coated titanium alloy fracture plate using finite element analysis |
| | **Mini-symposium – Design of Engineering Structures**<br>Venue: L13, Lecture Hall Complex | Invited Lecture by **Prof. Devesh Punera, IIT Bhubaneswar**<br>Title: Manufacturing defect-dependent modelling of variable angle tow composites using refined structural models |
| | | Paper IDs: Titles<br>294 (S01): Digital image correlation for vibration analysis of a decommissioned fighter jet wing using conventional and virtual calibration techniques<br>25: Numerical modelling of jointed plain concrete pavements: A survey of methods<br>93: Optimization of cross-section for structural members in airborne structure by using particle swarm optimization technique<br>122: Optimisation of tuned mass damper inerter considering soil structure interaction for low-rise building<br>142: Identification of stiffness and damping coefficients of a metamaterial-based casing from force-displacement relations obtained from experiments<br>197: Mode extraction from ultrasonic guided wave signals under narrowband signal via broadband measurement<br>234: Seismic behavior of tall building under long-period ground motions<br>S01: Sponsors talk from Pyrodynamics |
| | **Mini-symposium – Mechanics of Soft and Biological Matter**<br>Venue: TB 110, Tutorial Block | Invited Lecture by **Prof. Sumit Basu, IIT Kanpur**<br>Title: Surface stresses in ultra-soft solids<br><br>Invited Lecture by **Prof. Krishna Kannan, IIT Madras**<br>Title: A first-principles chemo-mechanical framework for smooth muscle contraction: From cellular kinetics to organ-level response |

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| | | Paper IDs: Titles<br>44: Modeling and FEM simulation on uniaxial deformation of hyperelastic<br>57: A variational thermodynamic model for pH and salt-responsive swelling of polyelectrolyte hydrogels<br>133: Thermodynamically consistent constitutive model for viscoelastic solids under finite deformation using evolving natural configurations<br>158: Nature-inspired spiral curling in splay-aligned liquid crystal polymers<br>169: Viscoelastic relaxation-induced evolution of anisotropy in liquid crystal elastomers<br>172: Sequence-encoded mechanics of DNA wrapping in nucleosomes |
| | **Mini-symposium – Mechanics of Composite Materials**<br>Venue: TB 111, Tutorial Block | Invited Lecture by **Prof. Prasad Patnaik, IIT Madras**<br>Title: Fluid-structure interaction: Cerebrovascular disease simulations for patient specific management |
| | | Paper IDs: Titles<br>7: Role of ply orientation and ABD matrix characteristics on the in-plane dynamic crushing behavior of CFRP honeycombs<br>14: Experimental low velocity impact analysis of carbon-flax-sisal hybrid composite<br>76: Numerical modeling and thickness optimization of Type - IV composite pressure vessels<br>79: Numerical investigation of the potential energy landscape of a four-corner simply supported square bistable plate with macro fiber composite<br>98: Investigation of the mechanical behaviour of CFRP laminates fabricated by the vacuum assisted resin transfer molding (VARTM)<br>102: Prediction of mechanical behaviour of cementitious composites using a UMT-based micromechanical model<br>134: Characterization of damage in laminated composite material and its relations with existing damage measures and models<br>150: Dynamic response of bi-modular rectangular plates under moving point load using FEM |

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<table>
<tr><td>13:15 - 14:30</td><td colspan="2">Lunch Break (Main Auditorium Lawn)</td></tr>
<tr><td rowspan="4">14:30 - 16:15</td><td colspan="2">Parallel sessions</td></tr>
<tr><td rowspan="2">Mini-symposium – Advances in Computational Solid Mechanics<br>Venue: L18, Lecture Hall Complex</td><td>Invited Lecture by Prof. Venkatraman Pandurangan, IIT Tirupati<br>Title: From data to physics: Machine learning in computational solid mechanics</td></tr>
<tr><td>Paper IDs: Titles<br>81: Prediction of curing induced residual stress evolution in polymers with porosity<br>146: Stochastic phase field approach to model microstructure evolution<br>175: A three-dimensional thermomechanical phase-field framework for modeling fracture in layered materials<br>178: Wellbore integrity analysis using the phase-field fracture method<br>180: Phase-field framework to model crack propagation in layered media with frictional interfaces in 3D<br>196: Finite element modeling of adhesively bonded composite beams using zigzag theory</td></tr>
<tr><td rowspan="2">Mini-symposium - AI and HPC for Applied Mechanics<br>Venue: L8, Lecture Hall Complex</td><td>Invited Lecture by Prof. Vadlamani Nagabhushana Rao, IIT Madras<br>Title: High-fidelity turbulence simulation towards exascale: Methods, case studies, and HPC strategies</td></tr>
<tr><td>Paper IDs: Titles<br>164: Physics-informed neural networks for higher-mode buckling analysis of Euler–Bernoulli beams using loss curvature scanning<br>171: An energy-based FDM-PINN framework for nonlinear laminated composite plates with arbitrary edge constraints<br>289: An autonomous multi-scale ICME agent framework: seamless integration of ab initio DFT, molecular dynamics, and crystal plasticity finite element simulations via automated scale-bridging<br>317: COMPSQUARE: A GPU-accelerated high-fidelity solver for flows in all speed regimes and turbomachinery applications</td></tr>
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| | | 334: Data-free physics-informed deep operator network for generalized low-Reynolds-number aerodynamic flow prediction |
| | **Mini-symposium - Fatigue and Fracture**<br>Venue: L9, Lecture Hall Complex | Invited Lecture by **Prof. Anirban Patra, IIT Bombay**<br>Title: Crystal Plasticity Modeling of Cyclic Deformation in Polycrystalline Ni-based Superalloys<br>Paper IDs: Titles<br>83: Experimental study on crack propagation in rotating machine elements under mixed-mode loading<br>87: FE analysis of FRP joints in bulkhead–deck region of ships<br>103: Finite element analysis of plasticity-induced crack closure in rotating porous functionally graded pre-twisted blades under cyclic thermo-mechanical loading<br>124: Bayesian updating of fracture toughness of concrete<br>127: Accelerating fatigue simulations in polycrystalline materials with second-phase particles |
| | **Mini-symposium – Mechanics in Bio-applications and Sports**<br>Venue: L12, Lecture Hall Complex | Invited Lecture by **Prof. Sanjay Mittal, IIT Kanpur**<br>Title: Sports aerodynamics: Cricket, badminton, frisbee<br>Paper IDs: Titles<br>68: Investigating the conjunction of muscle fatigue and mental fatigue while performing biceps curls – a neuromechanical approach<br>71: Identification of differentially expressed genes in PDAC using integrated gradients and convolutional neural networks<br>72: Assessment of differentially expressed genes in ASD using DESeq2 analysis of integrated RNA-Seq datasets<br>107: Development of a wearable bio-piezoelectric sensor for real-time joint and finger movement monitoring<br>131: Comparative study of the release mechanics of diclofenac from gelatin hydrogels prepared by in-situ and post-loading methods |
| | **Mini-symposium – Design of Engineering Structures** | Invited Lecture by **Prof. Kaustubh Dasgupta, IIT Guwahati** |

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| | Venue: L13, Lecture Hall Complex | Title: Seismic design philosophy of RC wall-frame buildings with the role of floor slabs |
| | | Paper IDs: Titles<br>251: Surface crack detection and failure prediction in structures using machine learning<br>257: Parametric study and optimization of concrete containing de-oiled spent bleaching earth, spent bleaching earth, and rice husk ash<br>290: Connection performance and frame-level behavior of cold-formed steel moment-resisting frames with optimized beam cross-section<br>323: A trilinear force deformation model of a novel damage prevention device<br>341: Structural analysis and optimization of a lead-screw-actuated span-morphing wing with lattice core support |
| | **Mini-symposium – Mechanics of Soft and Biological Matter**<br>Venue: TB 110, Tutorial Block | Invited Lecture by **Prof. Viswanath Chinthapenta, IIT Hyderabad**<br>Title: Investigation of sutures and sutureability in ophthalmology |
| | | Paper IDs: Titles<br>371: Phase field model for mixed-mode fracture in hyperelastic materials<br>205: Morphometric evaluation of perinuclear halo in koilocytotic cervical cells<br>221: An experimental study on effect of illumination on crack propagation in liquid crystal network films<br>225: Role of polymer volume fraction and crosslinker concentration on the elastic and fracture properties of polyacrylamide hydrogel<br>242: Bio-derived ZnO and CaO nanoparticles from organic waste: structure-property relationships and functional interactions with biological systems |
| | **Mini-symposium – Fluid-Structure Interaction**<br>Venue: TB 111, Tutorial Block | Invited Lecture by **Prof. Sanjay Kumar, IIT Kanpur**<br>Title: Vortex shedding onset behind a circular cylinder in soap film flows |
| | | Paper IDs: Titles<br>55: Comprehensive 3D-FEM analysis of helicopter blade using GCFEM<br>151: Computational aero acoustic analysis and material optimization of a low-noise VTOL rotor |

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<table>
<tr><td></td><td></td><td>219: Numerical study on magnetohydrodynamic oscillatory Couette flow with obstacle in channel using immersed boundary method<br>220: Computational study of magnetohydrodynamic flow over a rigid filament placed in a channel<br>230: Overset mesh-based fluid–structure interaction simulation of flexible insect wings</td></tr>
<tr><td>16:15 -16:30</td><td colspan="2">Tea Break (L18 Foyer)</td></tr>
<tr><td rowspan="3">16:30 - 18:30</td><td colspan="2">Parallel sessions</td></tr>
<tr><td rowspan="2">Mini-symposium - Plasticity and Creep<br>Venue: L18, Lecture Hall Complex</td><td>Invited Lecture by Prof. Praveen Kumar, IISc Bangalore<br>Title: Length scale effects on power law creep of materials: Cases of uniform and graded stress fields</td></tr>
<tr><td>Paper IDs: Titles<br>64: Plasticity of amorphous solids at the atomistic scale<br>105: A diffused-interface crystal plasticity grain boundary model to capture size effects in polycrystals<br>115: The effective behavior and field statistics of multiscale porous polycrystals<br>143: The role of geometrically necessary dislocation densities resolved on individual slip-systems in predicting micromechanics of single crystals<br>155: Effect of residual stress on low cycle fatigue behavior of Al-alloys<br>176: Thermo-mechanical modeling of void growth in glassy polymers under controlled stress states</td></tr>
<tr><td rowspan="2">Mini-symposium – Advances in Computational Fluid Dynamics<br>Venue: L8, Lecture Hall Complex</td><td>Invited Lecture by Prof. Harshal Akolekar, IIT Jodhpur<br>Title: Scientific machine learning for turbulence and transition modelling applications to gas turbine flows</td></tr>
<tr><td>Paper IDs: Titles<br>S02: Ansys digital engineering and AI solution for technological innovation and academic research</td></tr>
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| | | 110: Numerical investigation of hydrodynamic resistance of a rectangular barge in shallow water<br>170: Influence of rib height on flow and heat transfer in internal cooling channels<br>210: Drop-wise condensation with non-uniform micro pillars<br>217: Numerical investigation of low-Reynolds-number aerodynamics of the NACA 2412 airfoil using SST k–ω and γ–Reθ transition modeling<br><br>S02: Sponsors talk from CADFEM |
| | **Mini-symposium – Contact Adhesion & Friction**<br>Venue: L9, Lecture Hall Complex | Invited Lecture by **Prof. Gopakumar Parameswaran, BP Mumbai**<br>Title: A transient friction rig for differentiating engine lubricant performance at the high-pressure fuel pump roller-follower |
| | | Paper IDs: Titles<br>119: Enhancement of hardness and erosion performance of medium carbon steel through controlled hot compression<br>264: Tribological and corrosion performance of Al2O3-based thermal spray coatings<br>362: Characterization of stick-slip phenomenon in boundary lubricated contacts<br>277: High-temperature tribological performance of hybrid nano-reinforced cold-sprayed CoCrFeNiSi high-entropy alloy coatings<br>160: Nonlinear dynamic stability analysis of misaligned dual-layer porous bearings using additive-induced couple-stress lubrication |
| | **Mini-symposium – Mechanics of Composite Materials**<br>Venue: L12, Lecture Hall Complex | Invited Lecture by **Prof. C. S. Upadhyay, IIT Kanpur**<br>Title: The dawning age of plant-based composites: From waste to structure |
| | | Paper IDs: Titles<br>154: Generation of synthetic microstructure images of composites for probabilistic failure analysis |

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| | | 162: Flutter and vibration behaviour of damaged laminated composite plates with piezoelectric patches under thermal loads<br>182: Micromechanical characterization of phenolic composites using nanoindentation techniques<br>183: Thermo-chemo-mechanical-seepage modeling of curing of polymer composite<br>244: Effect of gradation on the thermal conductivity of graded geopolymer foam concrete<br>255: Experimental investigation of curvature evolution in bistable laminates using digital image correlation<br>269: A novel strategic approach to incorporate bagasse ash as reinforcement in aluminum matrix composites for automotive application<br>274: Stiffness degradation modeling of ramie fibre reinforced epoxy composite under fatigue loading using a microelement plastic strain accumulation model |
| | **Mini-symposium – Mechanics for Sustainability**<br>Venue: L13, Lecture Hall Complex | Invited Lecture by **Prof. C. Chandraprakash, IIT Kanpur**<br>Title: Biodegradable soft materials for sound absorption<br>Paper IDs: Titles<br>92: A unified mechanics theory–based lithium plating and SEI degradation model in lithium-ion batteries<br>184: Novel flame retardant material for potential application as battery spacers<br>187: Effect of a composite battery spacer on thermal runaway mitigation: a 3D numerical modelling approach |
| | **Mini-symposium – Undergraduate Research Program (URP)**<br>Venue: TB 110, Tutorial Block | Paper IDs: Titles<br>114: Computation of effective thermal properties of porous fibrous materials through meso-scale simulations<br>179: Analysis of local temperature on vibration and its control of sandwich panels<br>253: Design and analysis of planetary roller screws<br>318: Effect of nanofluids on thermal performance of an 18S1P lithium-ion battery thermal management system |

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| | | 363: Estimation of material properties and size of Heat-affected zone in welds using an inverse approach<br>367: Polar-azimuthal infrared thermography using a motorized platform<br>368: Classification of liquids with material property charts<br>372: The water wave of varying amplitude with vibrating water buoy as a source of thrilling water ride |
| | **Mini-symposium – Fluid-Structure Interaction**<br>Venue: TB 111, Tutorial Block | Invited Lecture by **Prof. Prasad Patnaik, IIT Madras**<br>Title: Fluid-structure interaction: Cerebrovascular disease simulations for patient specific management |
| | | Paper IDs: Titles<br>238: A study on turbulent flow induced motion in tandem cylinders<br>286: Towards hypersonic flow sensing: design of advanced semiconductor thermopile sensors architectures<br>325: CFD-CSD coupling for simulating fluid structure interaction of helicopter blades<br>349: Wear-aware mixed-lubrication simulation and surface-texture optimization of V-combined tandem reciprocating rod seals |
| 18:30 - 19:30 | AGM (L18, Lecture Hall Complex) | |
| 19:30 | Dinner (Main Auditorium Lawn) | |

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<table>
<tr><th>Time</th><th colspan="2">DAY 2, Friday (10 July 2026)</th></tr>
<tr><td>09:00 - 09:45</td><td colspan="2">Plenary Lecture 2: Prof L S Srinath Memorial Lecture - Prof. Jayant Sirohi (Venue: L18, Lecture Hall Complex)<br>Title: Harvesting energy from aeroelastic instabilities</td></tr>
<tr><td>09:45 - 10:15</td><td colspan="2">Tea Break (L18 Foyer)</td></tr>
<tr><td rowspan="3">10:15 – 12:45</td><td colspan="2">Parallel sessions</td></tr>
<tr><td>Mini-symposium – Advances in Computational Solid Mechanics<br>Venue: L18, Lecture Hall Complex</td><td>Paper IDs: Titles<br>239: Finite element-based investigation of compressive and fatigue properties of HA/PMMA composite bone scaffold<br>268: Modeling the cyclic mechanical behavior of Indian soft-block masonry using a physics-based finite element micro-model in OpenSees<br>314: A heat-transfer analogy framework for dynamic phase-field fracture in Abaqus/Explicit: application to hotspot dynamics in energetic materials<br>315: Mechanics of folded plates<br>347: Isogeometric Shape Optimization of a beams exhibiting snap-through buckling<br>352: A coupled BEM-FEM aproach for nonlinear electro-elastostatics of CNT-based MEMS structures</td></tr>
<tr><td>Mini-symposium – Advances in Computational Fluid Dynamics<br>Venue: L8, Lecture Hall Complex</td><td>Invited Lecture by Prof. Ratnesh Shukla, IISc Bangalore<br>Title: Adaptive-order unstructured methods for shock-driven flows<br><br>Invited Lecture by Prof. Ashwani Assam, IIT Patna<br>Title: Algorithmic advances in shock-resolving methods for compressible flow simulations<br><br>Paper IDs: Titles<br>226: Numerical study of biomagnetic channel flow: Oscillating and steady shear wall configurations</td></tr>
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| | | 228: Characterising spatial organisation of updrafts in a turbulent atmospheric boundary layer<br>232: Numerical investigation of crater formation on a dense granular bed due to air-jet impact<br>291: A cost-effective simulation framework for the aerodynamic design and development of UAVs<br>324: Development of wing-tip vortex in an inviscid, incompressible flow past a finite-span wing<br>336: Buoyancy-driven instabilities of miscible two-fluid interfaces in layered porous aquifers |
| | **Mini-symposium - Fatigue and Fracture**<br>Venue: L9, Lecture Hall Complex | Paper IDs: Titles<br>194: Mixed-mode stress intensity factors of eccentric edge-cracked perforated plate<br>216: Effect of load ratio on fatigue crack growth behaviour in AA7075-T651<br>218: Effect of specimen size on fracture energy of foamed concrete<br>247: Fracture analysis of edge-cracked column under eccentric loading<br>293: Effect of build atmosphere on phase evolution and fracture behaviour in 18 Ni M300 maraging steel<br>332: Effect of heat treatment and hydrogen charging on the mechanical behavior of Ti–6246 alloy<br>346: Scalable elasto-plastic phase field fracture with adaptive mesh refinement |
| | **Mini-symposium – Mechanics of Composite Materials**<br>Venue: L12, Lecture Hall Complex | Invited Lecture by **Prof. Suresh Kumar, DMSRDE**<br>Title: C/SiC Composites for thermo-structural applications: Achievements, mechanics challenges and development methodology |
| | | Paper IDs: Titles<br>278: Design and optimization of multifunctional hybrid composite flaperon<br>280: Linear dynamic analysis of viscoelastic laminated composite shells |

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| | | 281: RVE analysis of glass woven composite with embedded random short carbon fiber for stealth structures<br>304: Investigation of coupled electromechanical behaviour in CNT-based composites under stepwise fatigue loading<br>307: Design of thermally induced multistable laminates for deployable structures<br>340: Experimental and numerical investigation of buckling and vibration behavior in stainless steel wire-reinforced filament-wound hybrid composite cylinders<br>359: Optimal design of viscoelastic variable stiffness laminated plates<br>370: Aligned CNT reinforced UHMWPE fibers: thermo-mechanical behavior<br>375: Effect of material processing on the mechanical and failure properties of radar absorbing paint materials |
| | **Mini-symposium -Geomechanics and Planetary Science**<br>Venue: L13, Lecture Hall Complex | Invited Lecture by **Prof. Manash Chakraborty, IIT (BHU) Varanasi**<br>Title: Seepage and consolidation flow through unsaturated soil<br><br>Invited Lecture by **Prof. Satyajit Pramanik, IIT Guwahati**<br>Title: Deformation-driven mixing in a soft porous medium |
| | | Paper IDs: Titles<br>70: Understanding collapse and flow mechanism of lunar soil simulant employing smoothed particle hydrodynamics simulation<br>82: Implementing fracture mechanics into a geodynamic modelling framework: a phase-field approach<br>111: Advanced visco-hypoplastic model for gas hydrate-bearing sediments<br>113: A coupled hydro–mechanical peridynamic model for instabilities in ductile geomaterials<br>157: Open-channel granular flow over a semi-ellipsoidal obstacle<br>259: Investigating appropriate confinement framework for studying behavioral evolution in size-dependent granular soils |

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| | | 266: Numerical study of collapse dynamics and impact of annular inner granular flow front on the obstacle<br>282: Dynamic response of floating piles in non-homogeneous soil: influence of boundary condition |
| | **Mini-symposium – Numerical Simulations for Static and Dynamic Studies**<br>Venue: TB 110, Tutorial Block | Invited Lecture by **Prof. S.K. Panda, IIT (BHU) Varanasi**<br>Title: Dynamic fracture behavior of nuclear graphite |
| | | Paper IDs: Titles<br>19: Influence of extreme on-orbit thermal loading on the modal behaviour of inflatable space torus<br>21: Design and dynamic analysis of inflatable smart material membrane based space antenna<br>24: 3D progressive damage modeling of fracture and rake angle–influenced machining damage in heterogeneous layered materials<br>46: Prediction of underwater explosion-induced damage to a plate located at the free surface of a water tank using the finite volume method<br>48: Numerical study on blast response of sandwich and corrugated metallic panels: effect of geometry and material selection<br>54: Slope stability analysis of thermal power plant ash dyke using finite element method<br>86: A comparative study of heat transfer in functionally graded longitudinal fins of constant weight under temperature dependent parameters<br>136: A nonlinear Euler-Bernoulli beam framework for carbon nanotube nanoscale mass detection |
| | **Mini-symposium – Mechanics of Smart Materials and Structures**<br>Venue: TB 111, Tutorial Block | Invited Lecture by **Prof. Shaikh Faruque Ali, IIT Madras**<br>Title: Mechanics of energy harvesters |
| | | Paper IDs: Titles<br>10: Hybrid hydraulic piezoelectric suspension energy harvester for enhanced power generation on smooth road conditions |

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| | | 20: Microstretch continuum theory modeling for nematic liquid crystalline elastomers<br>42: Finite deformation mechanics of electrostriction in elastic dielectrics<br>91: Coupled multiphysics framework for modeling carbon fibre-based structural battery composites<br>132: A multiphase phase-field study of grain boundary-induced martensitic phase transformations in polycrystalline materials at finite strains<br>156: Analytical modeling of magnetization response in MSMAs via homotopy perturbation and unified Green's functions<br>163: Auxetic meta-material for next-generation concrete reinforcement<br>177: Design and nonlinear analysis of a hybrid linkage–SMA tendon morphing airfoil |
| 12:45 - 14:00 | Lunch Break (Main Auditorium Lawn) | |
| 14:00 - 16:00 | Parallel sessions | |
| | **Mini-symposium - Plasticity and Creep**<br>Venue: L18, Lecture Hall Complex | Invited Lecture by **Prof. Shyam Keralavarma, IIT Madras**<br>Title: Mechanics of plastic instability in thermo-viscoplastic solids<br><br>Invited Lecture by **Prof. P. J. Guruprasad, IIT Bombay**<br>Title: Dislocation mean free path and grain size effects in creep plasticity of polycrystalline metals |
| | | Paper IDs: Titles<br>271: Modeling temperature-dependent anisotropic deformation of Ti and Mg alloys using dislocation density-based crystal plasticity model<br>273: In-situ investigation on hydrogen-induced deformation micro-mechanisms in commercially pure titanium<br>276: Interplay of martensitic transformation and martensite plasticity in governing fracture behavior of FeMnCoCr high entropy alloy<br>285: In-situ studies on deformation of WAAM printed commercially pure copper |

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| | **Mini-symposium - AI and HPC for Applied Mechanics**<br>Venue: L8, Lecture Hall Complex | Invited Lecture by **Prof. Souvik Chakraborty, IIT Delhi**<br>Title: See, hypothesize, discover: Agentic AI for scientific discovery |
| | | Paper IDs: Titles<br>360: On the use of machine learning for predicting railway vehicle derailment risk<br>361: Reconstructing roughness-induced transition in boundary layer using super-resolution<br>369: Physics-informed neural network for characterization of thermal properties<br>373: Physics-informed graph neural networks for mesh-free stress analysis in heterogeneous materials |
| | **Mini-symposium – Contact Adhesion & Friction**<br>Venue: L9, Lecture Hall Complex | Invited Lecture by **Dr Ramkumar Penchaliah, IIT Madras**<br>Title: Systematic approach for contact mechanics-based FEM wear simulation |
| | | Paper IDs: Titles<br>38: Simulation of multipass sliding in soft ductile metals using a remeshing framework<br>309: Computational study of the adhesion and friction behavior of cross-linked polymer networks<br>311: Designing bioactive and mechanically tunable hydrogels for soft tissue reconstruction<br>267: Nano-silica based aqueous colloidal gels as eco-friendly thixotropic lubricant<br>374: Shear-driven tribochemistry of MXenes at sliding interfaces |
| | **Mini-symposium – Mechanics in Bio-applications and Sports**<br>Venue: L12, Lecture Hall Complex | Paper IDs: Titles<br>229: Biomechanical evaluation of impact on gender in plyometric exercise among trained and untrained individuals – a comparative study with rope skipping<br>235: Multimodal two-stream fusion network for early mild cognitive impairment classification using MRI and genetic data |

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| | | 246: Automated detection of neurological disorders using EEG spectral analysis and Quantum support vector machine<br>248: A proposal for deep learning–based quantitative interpretation of lateral flow assays using YOLOv8n and intensity profiling<br>321: Muscle-specific characterization of micro-expression in facial electromyography signals using relative wavelet energy<br>335: Biomimicking the autorotation of hollong seed<br>353: Assessment of abductor pollicis brevis muscle function using myotonometry and infrared thermography<br>355: Differentiation Of Fatiguing muscle contractions in the dominant and non-dominant hands using electromyography signals and synchrosqueezed wavelet transform |
| | **Mini-symposium - Design of Engineering Structures**<br>Venue: L13, Lecture Hall Complex | Invited Lecture by **Prof. Avik Samanta, IIT Patna**<br>Title: Behavior of class-4 steel beams with opening |
| | | Paper IDs: Titles<br>342: Effect of overshooting error caused by Giuffrè-Menegotto-Pinto material model in seismic analysis of buckling-restrained braced frame buildings<br>350: Complementary energy-based modal optimization in lattice metamaterials<br>364: Experimental investigation of a dual-beam marine propeller<br>125: Experimental investigation on the efficacy of a friction damper in attenuating vibrations of a system of coupled cantilever beams |
| | **Mini-symposium – Numerical Simulations for Static and Dynamic Studies**<br>Venue: TB 110, Tutorial Block | Invited Lecture by **Prof. B. Venkataraman, Amrita Vishwa Vidyapeetham**<br>Title: Mechanics of static and dynamic indentation and its relevance in engineering application |
| | | Paper IDs: Titles<br>144: Effect of discretization on fracture response of cement mortar using XCT-derived models under tension, compression, and shear<br>165: Triumph of safety-critical frame unit installation in the rig |

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| | | 189: Dynamics of a geometrically exact beam carrying a unprescribed moving mass<br>207: Finite element-based rotordynamic analysis of gas turbine rotor assembly with curvic coupling<br>326: Numerical Analysis of a dual-beam marine propeller<br>327: Numerical investigation of V-shaped metallic plates coated with polyurea under blast loading<br>366: Finite element investigation of inflation deployment in thin-film metal–polymer laminated inflatable structures<br>372: The water wave of varying amplitude with vibrating water buoy as a source of thrilling water ride |
| | **Mini-symposium - Mechanics of Highly Deformable Bodies & Materials**<br>Venue: TB 111, Tutorial Block | Invited Lecture by **Prof. M. S. Bobji, IISc Bengaluru**<br>Title: Controlled cone crack formation in hydrogels during needle insertion: Influence of network structure<br><br>Invited Lecture by **Prof. Akshay Joshi, IISc Bengaluru**<br>Title: Hetero-EUCLID: Interpretable model discovery for heterogeneous hyperelastic materials using stress-unsupervised learning |
| | | Paper IDs: Titles<br>34: Effects of the curvature sign on the peeling of thin films from curved substrates<br>145: Study of the crater size and morphology of the debris cloud against the hypervelocity impact of the projectile using smooth particle hydrodynamics<br>153: Membrane mechanics and dynamics of vesiculation<br>287: Numerical analysis of structural performance of Kapton® inflatable booms |
| 16:00 -16:30 | Tea Break (L18 Foyer) | |
| 16:30 - 18:30 | **Mini-symposium - Plasticity and Creep**<br>Venue: L18, Lecture Hall Complex | Invited Lecture by **Prof. Ilaksh Adlakha, IIT Madras**<br>Title: Effect of hydrogen on plasticity of α-Fe: a multi-scale assessment |

<table>
<tr><td rowspan="3"></td><td></td><td>Paper IDs: Titles<br>322: Coupled effects of nanosize precipitates and dislocation loops on the fracture toughness of irradiated martensitic steels<br>356: Experimental investigation and constitutive modeling of alloy 690 using the Johnson-Cook model up to 800°C<br>358: Multi-step heat treatment for dual microstructure engineering in titanium alloys: Implications for crystal plasticity modeling</td></tr>
<tr><td rowspan="2">Mini-symposium - Turbulent and Complex Flows<br>Venue: L8, Lecture Hall Complex</td><td>Invited Lecture by Prof. Aniruddha Sinha, IIT Bombay<br>Title: Modelling non-axisymmetric jet noise</td></tr>
<tr><td>Paper IDs: Titles<br>80: Numerical investigation of laminar separation bubble and transition onset over a low Reynolds number airfoil<br>88: Unsteady behavior of low Reynolds number confined impinging jet<br>104: Comprehensive study of role of Atwood number in two-layer Rayleigh-Taylor instabilities<br>116: Role of elevated free-stream turbulence on the separation-induced transition in low pressure turbines<br>118: Effect of Mach number on wake dynamics in compressible flow past a rotating cylinder</td></tr>
<tr><td>Mini-symposium – Contact Adhesion & Friction<br>Venue: L9, Lecture Hall Complex</td><td>Invited Lecture by Prof. Nitya Nand Gosvami, IIT Delhi<br>Title: Anisotropic frictional characteristics of bioinspired nanopatterned surfaces</td></tr>
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| | | Paper IDs: Titles<br>377: Adhesion of rough and soft solids<br>262: Influence of mixing ratio and process parameters on PDMS–glass interfacial friction and adhesion<br>279: Genesis of adhesion and friction: from quantum scale to engineering scale—an AI driven approach<br>305: Tribological study of PDMS+CNT composite membranes with different percentages of MWCNT<br>376: Enhanced magnetic and tribological performance of CNT-reinforced polyacrylamide/Ni ferrogel for advanced functional applications |
| | **Mini-symposium - Mechanics in Bio-applications and Sports**<br>Venue: L12, Lecture Hall Complex | Paper IDs: Titles<br>357: Proposal of a hardware system for the measurements of center of pressure during postural instabilities<br>365: EEG-based multidimensional emotion level classification using dual-input LSTM |
| | **Mini-symposium - Mechanics of Smart Materials and Structures**<br>Venue: L13, Lecture Hall Complex | Paper IDs: Titles<br>193: Nonlinear dynamics and chaos prediction in a coupled two-cylinder bistable VIV harvester<br>200: Effect of substrate material on vibration-based piezoelectric energy harvester<br>204: Simulation and design of tunable bistable auxetic metamaterials<br>233: Experimental investigation of magnetically induced nonlinear dynamics in a piezoelectric cantilever energy harvester<br>243: Design and experimental performance analysis of a damper for vibration mitigation in automobiles<br>250: SH-Wave propagation in a flexoelectric layer overlying a piezoelectric substrate with micro-inertia and electro-mechanical flawed coupling effects<br>261: Comparative study of geometric tapering effects in smart structures |

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| | **Mini-symposium - Mechanics of Soft and Biological Matter**<br>Venue: TB 110, Tutorial Block | Paper IDs: Titles<br>256: Single and double network hydrogels under complex loading: Role of effective chains<br>295: Characterization of two third-order kinematical tensors relevant to soft shells<br>306: Mechanical behavior of accelerated-aged composite solid propellants<br>319: Topological defects in nematic liquid crystals |
| 18:30 – 19:30 | Cultural Program (Outreach Auditorium) | |
| 19:30 | Gala Dinner (Main Auditorium Lawn) | |

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<table>
<tr><th>Time</th><th colspan="2">DAY 3, Saturday (11 July 2026)</th></tr>
<tr><td>09:00 - 09:45</td><td colspan="2">Plenary Lecture 3: Karunakaran Memorial Lecture - Prof. Ravindra Adusumilli (Venue: L18, Lecture Hall Complex)<br>Title: When development devours people: A critique of S&T competency in grassroots solutioning</td></tr>
<tr><td>09:45 - 10:15</td><td colspan="2">Tea Break (L18 Foyer)</td></tr>
<tr><td rowspan="3">10:15 – 12:45</td><td colspan="2">Parallel sessions</td></tr>
<tr><td rowspan="2">Mini-symposium – Ayurveda<br>Venue: L18, Lecture Hall Complex</td><td>Invited lecture by Prof. V Srinivasa Chakravarthy, IIT Madras<br>Title: Rethinking the tridosha theory of Ayurveda: A biothermodynamic perspective<br><br>Invited Lecture by Dr. GRR Chakravarthy, SJSACH, Chennai<br>Title: Yukti Vyapāśraya: Scientific characterisation of rational therapeutics<br><br>Invited Lecture by Dr Rishi Manivannan, Director, Vaidyarishi Ayurveda<br>Title: Daivavyapasraya chikitsa – Unmada & Apasmara: wrt autism spectrum disorder<br><br>Invited Lecture by Prof Shripathi Acharya, Muniyal Institute of Ayurveda Medical Sciences<br>Title: Role of daiva vyapashraya chikitsa in the management of autism</td></tr>
<tr><td>Paper IDs: Titles<br>60: Spectroscopy, acoustics, and AI-based studies of nanoparticles formed from ultra-diluted homoeopathic medicines<br>224: Investigating lipid-vesicle mediated curcumin-transport pathways In turmeric milk<br>283: Mechanics of ayurvedhic therapies (Swedhanam-Pottali application)</td></tr>
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| | **Mini-symposium – Turbulent and Complex Flows**<br>Venue: L8, Lecture Hall Complex | Invited Lecture by **Prof. Somnath Roy, IIT Kharagpur**<br>Title: Flow features over bileaflet mechanical heart valves |
| | | Paper IDs: Titles<br>215: Dispersed two-phase flow over a plate: influence of elastic and inelastic collisions<br>223: Modelling the flow behind an abrupt roughness transition in a high-Reynolds number boundary-layer<br>297: Measurement of species concentration and temperature using coherent anti-Stokes Raman spectroscopy in combustors<br>302: Optimal perturbation of vortex pair evolving in a stratified medium<br>313: Unsteady oscillations of separated shear flows on a flat plate with adverse pressure gradient<br>338: Dual-mask Minkowski and skeleton-graph analysis of air-assisted spray atomization<br>339: Integral estimates of thermal boundary layer thickness under a transverse magnetic field<br>345: Enhanced two-stage prediction of spatio-temporal wind pressure field using multivariate analysis and deep neural network |
| | **Mini-symposium – Mechanics of Smart Materials and Structures**<br>Venue: L9, Lecture Hall Complex | Invited Lecture by **Prof. Bishakh Bhattacharya, IIT Kanpur**<br>Title: Evolution of intelligent autonomous system based on smart materials |
| | | Paper IDs: Titles<br>292: Energy harvesting using friction-induced self-excited vibration of a bimorph piezoelectric cantilever beam<br>328: Design and optimisation of acoustic metamaterials for underwater anechoic tiles |
| | **Mini-symposium – Extreme Mechanics**<br>Venue: L12, Lecture Hall Complex | Invited Lecture by **Prof. Dhiraj K. Mahajan, IIT Ropar**<br>Title: Understanding the interplay of multiple mechanisms of hydrogen embrittlement using experiments and simulations |

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| | | Paper IDs: Titles<br>62: Influence of elevated temperatures on the dynamic shear behaviour of carbon-epoxy woven composites<br>85: Simulation of plasma jet emission in flat plate electromagnetic welding<br>90: Shock response of additively manufactured onyx composite specimens under high-speed shock loading<br>99: Shock response of kevlar and carbon laminates under shock tube loading<br>108: Simulation and analysis of flat coil for magnetic pulse welding of Al/Cu flat sheet<br>138: High strain rate tensile behaviour of woven carbon/kevlar hybrid composite<br>174: Response of modified GLARE composites under dynamic tensile loading conditions<br>181: A numerical study for laser induced ablation of protective coating and failure of composite substrate |
| 12:45 - 14:00 | Lunch Break (Main Auditorium Lawn) | |
| 14:00 - 16:00 | Parallel sessions | |
| | **Mini-symposium – Ayurveda**<br>Venue: L18, Lecture Hall Complex | Invited Lecture by **Dr. P. K. Partheeban, Swabhimaan Trust – Holistic Solutions for Autism**<br>Title: Bridging neurodiversity, tradition, and technology |

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| | | Panel discussion |
| | **Mini-symposium - Geomechanics and Planetary Science**<br>Venue: L8, Lecture Hall Complex | Paper IDs: Titles |
| | **Mini-symposium - Mechanics of Highly Deformable Bodies & Materials**<br>Venue: L9, Lecture Hall Complex | Invited Lecture by **Prof. Abir Bhattacharyya, IIT Jodhpur**<br>Title: Elastic modulus and strain-dependent lateral to axial strain ratio in semi-dilute polyacrylamide hydrogels |
| | | Paper IDs: Titles<br>301: Transient thermo-fluid–structure interaction analysis of pneumatic hose snapping using viscoelastic and isotropic material modeling<br>312: Modal characterization of flapping wings using 3D-DIC |
| | **Mini-symposium – Extreme Mechanics**<br>Venue: L12, Lecture Hall Complex | Invited Lecture by **Prof. Ganpule Shailesh Govind, IIT Roorkee**<br>Title: Biomechanical analysis of surrogate head forms equipped with ballistic helmets under high velocity bullet impact<br><br>Paper IDs: Titles |

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| | | 260: High strain rate compressive strength of boron carbide prepared by different processing routes<br>272: Deformation behavior of hydrogen-charged CP-Titanium: Effect of temperature and strain rate<br>337: Design of auxetic sandwich panels for improved blast resistance and energy absorption<br>344: Multiphysics modeling of stress corrosion cracking in materials with manufacturing-induced residual stress |
| | Tea Break (L18 Foyer) | |
| 16:15 -16:30 | Valedictory Function | |