

MONDAY 13 JUNE 2022

18.00-21.00

Icebreaking get-together

TUESDAY 14 JUNE 2022

Plenum - Invited lectures

Place: Trondhjemssalen 1 - Chair: M. Langseth

08.30-08.50	Welcome - Olav Bolland , Dean at the Faculty of Engineering, NTNU
08.50-09.20	<i>Impact Loading of Components and Structures</i> M. Alves (University of São Paulo)
09.20-09.50	<i>Modelling of Failure in Aluminium Structures</i> O.S. Hopperstad (NTNU)
09.50-10.20	BREAK
Session 1 - Failure of structures and materials under impact and blast loading - Chair: T. Børvik	
10.20-10.40	<i>Modeling the Interaction of a Generic Hollow Projectile with Different Types of Masonry</i> A. Heine , C. Sauer, W. Riedel (Fraunhofer EMI)
10.40-11.00	<i>Experimental investigation under laser-driven shocks of the dynamic behavior of materials for beam-intercepting devices in particle accelerators</i> L. Baudin (CERN), C. Accettura (CERN), A. Morena (Politecnico di Torino), L. Wegert (GSI), A.S. Martynenko (GSI), P. Neumayeur (GSI), M Tomut (GSI/University of Münster), A. Bertarelli (CERN), F. Carra (CERN), L. Peroni (Politecnico di Torino), M. Scapin Politecnico di Torino, C. Brabetz (GSI)
11.00-11.20	<i>New insights into the role of porous microstructure on dynamic shear localization</i> A. R. Vishnu, M. Marvi-Mashhadi, J. C. Nieto-Fuentes, J. A. Rodríguez-Martínez (University Carlos III Madrid)
11.20-11.40	BREAK
11.40-12.00	<i>The behavior of ceramics and geomaterials during impact events</i> K.T. Ramesh (Johns Hopkins University)
12.00-12.20	<i>Sensitivity analysis of analysis program to crash analysis results of the aircraft engine for the spent fuel transport cask</i> J.S. Kim (Sejong University), M.S. Cha (Graduate School, Sejong University)
12.20-12.40	<i>Performance of a Welded Steel Component Under Shock Loading</i> M. Cotton , A. Whorton (AWE Aldermaston)
12.40-13.00	<i>Studying Dynamic Fragmentation of Metallic Rings Using a Single-stage Gas Gun: A Novel Experimental Approach</i> J.C. Nieto Fuentes (UC3M) N. Jacques (ENSTA), J.A. Rodríguez-Martínez (UC3M)
13.00-14.00	LUNCH
Session 2 - Failure of structures and materials under impact and blast loading - Chair: M. Alves	
14.00-14.20	<i>A distribution model for low-velocity impact tests on Kevlar-epoxy composites reinforced by nanoparticles</i> D. Ma (Politecnico di Milano), S.C. Amico (Federal University of Rio Grande do Sul), M. Giglio (Politecnico di Milano), A. Manes (Politecnico di Milano)
14.20-14.40	<i>Deformation and energy absorption characteristics of 3D-printed polymeric lattices under static and impact compression</i> Z.P. Sun (National University of Singapore), Y.B. Guo (National University of Singapore), V.P.W. Shim (Ningbo University/National University of Singapore)
14.40-15.00	<i>Data-driven approach to account for fluid-structure interaction effects on blast loaded steel plates</i> L. Lomazzi (Politecnico di Milano), A. Manes (Politecnico di Milano), F. Cadini (Politecnico di Milano), D. Morin (NTNU), V. Aune (NTNU)
15.00-15.20	<i>Adiabatic Shear Failure of Lightweight Materials: From Titanium Alloys to PA66-GF30 Composite</i> L. Zhang , D. Townsend (University of Oxford)
15.20-15.40	<i>Snow Avalanche Impact Loads: Work-Energy Methods to Calculate Impulsive Pile-Up and Deflection Forces with Shear Traction</i> P. Bartelt, J. Borner , A. Caviezal (WSL Institute for Snow and Avalanche Research SLF)

15.40-16.00	BREAK
Plenum - Invited lectures - Chair: M. Langseth	
16.00-16.30	<i>Additively Manufactured Protective Structures</i> T. Børvik (NTNU), M. Costas (NTNU), M. Edwards-Mowforth (The University of Edinburgh), M. Kristoffersen (NTNU)
16.30-17.00	<i>Post-Failure Momentum Transfer in Momentum Enhancement, Size Scaling, and Comments on the DART Impact in September</i> J. Walker , S. Chocron (Southwest Research Institute)
18.00-20.00	Concert and Welcome Reception at Nidaros Cathedral

WEDNESDAY 15 JUNE 2022

Plenum - Invited lectures - Chair: M. Langseth		
08.30-09.00	<i>Transient response of structures subjected to blast loading: the chase for better experimental measurements</i> G.S Langdon (The University of Sheffield/BISRU), R.J. Curry (The University of Sheffield), S.E. Rigby (The University of Sheffield), S.D. Clarke (The University of Sheffield), A. Tyas (The University of Sheffield/Blastech Inc.)	
09.00-09.30	<i>Crash Response of Li-ion Battery cells: From multi-scale analysis to engineering models</i> T. Tancogne-Dejean (ETH Zurich), J. Zhu (MIT), D. Mohr (ETH Zurich/MIT)	
09.30-10.00	BREAK	
Parallel sessions 10.00-15.00		
	Session 3 - Failure of structures and materials under impact and blast loading Place: Trondhemssalen 1 - Chair: G.S. Langdon	Session 4 - Dynamic material behaviour and failure Place: Trondhemssalen 2 - Chair: P. Verleysen
10.00-10.20	<i>Comparison of drone collision and bird strike on aircraft radome using experimental and simulation methods</i> S. Heimbs , J. Hansen, M. Woidt (TU Braunschweig)	<i>Mechanical behavior of Ultra High Molecular Weight PolyEthylene for blast and ballistic protection</i> M. Arrigoni , M. Castres, A. El Malki Alaoui (IRDL/ENSTA Bretagne)
10.20-10.40	<i>Behaviour of multi-layered plates impacted by high-velocity projectiles</i> M. Orlov , V.P. Glazyrin, T.V. Fazylov (Tomsk State University) <i>Optimization of the electromechanical behavior of a piezoresistive polyurethane based foam during quasi-static and dynamic solicitations</i> A. Poirot (ESTACALAB/ENSTA Bretagne), M. Arrigoni (ENSTA Bretagne), N. Bedrici (ESTACALAB), Jean-Christophe Walrick (ESTACALAB)	<i>The challenge of accurate strain measurement during dynamic testing of fibrous composites in the split Hopkinson bar technique</i> A. Gilat , J. Seidt, M. Konieczny (The Ohio State University)
10.40-11.00	<i>Carbon fibre composite exposed to blast loading: A preliminary study</i> R. del Cuvillo (UC3M), M. Costas (NTNU) V. Aune (NTNU), T. Børvik (NTNU) J. A. Artero-Guerrero (UC3M), J. Pernas-Sánchez (UC3M), J. López-Puente (UC3M)	<i>Failure characterization for polymers at different strain rates and temperatures</i> V. Dorléans (FAURECIA), R. Delille (UPHF), F. Lauro (UPHF), D. Notta-Cuvier (UPHF), G. Haugou (UPHF), E. Michau (FAURECIA)
11.00-11.20	<i>Effects of Ship Collision on Offshore Wind Turbines</i> N. Mehreganian (University of Massachusetts Dartmouth), G.K. Boiger (ZHAW), Y. Safa (ZHAW), A.S. Fallah (Oslo Metropolitan University)	<i>Mechanical response of an armour steel alloy under combined condition of elevated temperature, high strain rate and triaxiality</i> E. Cadoni , M. Dotta, D. Forni (University of Applied Sciences and Arts of Southern Switzerland) <i>Experimental study on the response of sacrificial add-on armor</i> L. Blanc , D. Eckenfels, J.F. Legendre (ISL)

11.20-11.40	BREAK	BREAK
	Chair: O.S. Hopperstad	Chair: D. Mohr
11.40-12.00	<i>Experimental and Numerical Investigation of High Density Polyurethane Foam for Impact Against Metallic Target Plates</i> D. Narayan , M. Singh, N. Bhatnagar (Indian Institute of Technology Delhi)	<i>A simplified approach in the design of energy absorbing cellular structures by means of the efficiency curves</i> M. Avalle (University of Genoa)
12.00-12.20	<i>A state of the art review of numerical models for Hyper Velocity Impacts in Space</i> T. Cardone (Delft University of Technology/ESTEC ESA), C. Bisagni (Delft University of Technology)	<i>Blast Attenuation in Cohesive Soils</i> A. van Lerberghe (University of Sheffield), S. Clarke (University of Sheffield), A.D. Barr (University of Sheffield), S.L. Kerr (DSTL)
12.20-12.40	<i>Low-velocity impact on aluminium plates with geometric defects. An experimental and numerical study</i> V. Espeseth , T. Børvik, O.S. Hopperstad (NTNU)	<i>Polymer testing with a pre-tensioned steel split-Hopkinson bar</i> E. Schwenke , D. Morin, A.H. Clausen (NTNU)
12.40-13.00	<i>Blast resistance of pre-damaged steel plates</i> B.S. Elveli , T. Berstad, T. Børvik, V. Aune (NTNU)	<i>Impact of Full-field Measurement Biases on Identification of Anisotropic Material Behavior Model</i> J.D. Thoby (ONERA/UPHF/LAMIH), T. Fourest (ONERA), D. Notta-Cuvier (ONERA/LAMIH), E. Markiewicz (UPHF/LAMIH), B. Langrand (ONERA/LAMIH)
13.00-14.00	LUNCH	LUNCH
	Session 5 - Terminal ballistics Chair: O.S. Hopperstad	Session 6 - Dynamic material behaviour and failure Chair: D. Mohr
14.00-14.20	<i>A numerical modelling and generative deep learning approach to the ballistic impact resistance of additive manufactured maraging steel plates</i> M. Edwards-Mowforth (The University of Edinburgh) S. Thompson (The University of Edinburgh), M. Costas (NTNU), M. Kristoffersen (NTNU), T. Børvik (NTNU), F. Teixeira-Dias (The University of Edinburgh)	<i>Characterization with LASer Shock Adhesion Test of the interface strength of a HDPE composite coated with ceramic</i> R. Ben Saada (ENSTA Bretagne), A. El Malki Alaoui (ENSTA Bretagne), G. Darut (Université Bourgogne Franche-Comté), J. Le Blanche (ENSTA Bretagne), M. Arrigoni (ENSTA Bretagne)
14.20-14.40	<i>Modelling of concrete subjected to projectile impact</i> S. Dey (Norwegian Defence Estates Agency), M. Kristoffersen (NTNU), O. Toreskås (Norwegian Defence Estates Agency), T. Børvik (NTNU)	<i>Static and dynamic characterization of UHMWPE with nanoparticles</i> A.R. Aziz, H. Alabdouli, A. Alshehhi, M. Gutierrez, R. Santiago, Z. Guan (Advanced Materials Research Center)
14.40-15.00	BREAK	BREAK
	Plenum - Invited lectures Place: Trondhjemsalen 1 - Chair: M. Langseth	
15.00-15.30	<i>Some studies of the mechanics of origami structures and materials</i> G. Lu (Swinburne University of Technology)	
17.00-21.00	Boat trip to Munkhomen (Monk's islet)	

THURSDAY 16 JUNE 2022

Plenum: Invited lectures - Chair: M. Langseth		
08.30-09.00	<i>Heterogeneous field based tests for identification of materials constitutive models at high rate of strains</i> E. Markiewicz (UPHF), B. Langrand (UPHF/ONERA), D. Notta-cuvier (INSA/UPHF)	
09.00-09.30	<i>Revealing the strain rate dependent behaviour of a dual phase automotive steel by in-depth analysis of test data</i> P. Verleysen , S. Chandran (Ghent University)	
09.30-10.00	BREAK	
Parallel sessions 10.00-16.00		

	Session 7 - Structural crashworthiness Place: Trondhemssalen 1 Chair: E. Markiewicz	Session 8 - Impact, blast and high-rate loading/ measurement techniques and their applications Place: Trondhemssalen 2 - Chair: G. Lu
10.00-10.20	<i>Determination of mechanical property profiles for improved crash performance of a dual phase automotive steel</i> S. Chandran , P. Verleysen (Ghent University)	<i>The Virtual Fields Method for Reconstruction of Impact and Blast Loading</i> R. Kaufmann , S.N. Olufsen, E. Fagerholt, V. Aune (NTNU)
10.20-10.40	<i>Experimental study for water impact of composite panels</i> Y. Tu (Delft University of Technology), M. Zanella (Politecnico di Milano), P. Astori (Politecnico di Milano), C. Bisagni (Delft University of Technology)	<i>Suppression of Extra Oscillations on Impact Force Wave in Instrumented Taylor Impact Test by Pulse-shaping Technique</i> C. Gao (Hiroshima University), T. Iwamoto (Hiroshima University), Y. Tanaka (Hiroshima University), T. Kusaka (Ritsumeikan University)
10.40-11.00	<i>Using machine learning to analyze and design low-density foam for impact energy absorption</i> F. Zhu (Johns Hopkins University), R. Zhou (Johns Hopkins University), Z. Yang (Suffolk University)	<i>A Measurement of Impact Force by PVDF for Instrumented Taylor Impact Test</i> N. Sakata , G. Chong, T. Iwamoto, Y. Tanaka (Hiroshima University)
11.00-11.20	<i>The effective width and fold size of thick square tubes under axial loading</i> N. Jafarzadeh Aghdam , K.U. Schroeder (RWTH-Aachen University)	<i>Impact of PU Foam Projectiles to Assess the Performance of Aluminum Panels Against Blast Loading</i> D. Narayan , N. Bhatnagar (Indian Institute of Technology Delhi)
11.20-11.40	BREAK	BREAK
	Chair: A.H. Clausen	Chair: B. Langrand
11.40-12.00	<i>Characterization and modelling of the fast dynamics strength of a Pa66/Aluminum SPR assembly</i> N. Leconte, B. Bourel, F. Lauro , E. Markiewicz (UPHF)	<i>Optimization of the electromechanical behavior of a piezoresistive polyurethane based foam during quasi-static and dynamic solicitations</i> A. Poirot (ESTACALAB/ENSTA Bretagne), M. Arrigoni (ENSTA Bretagne), N. Bedrici (ESTACALAB), Jean-Christophe Walrick (ESTACALAB)
12.00-12.20	<i>Development of a numerical model of a motorcycle helmet for the investigation of road traffic accidents</i> H. Ramos (University of São Paulo/Technology Innovation Institute), R. Santiago (University of São Paulo/Technology Innovation Institute), M. Alves (University of São Paulo)	<i>Design of a high strain rate in-plane torsion test</i> V. Grolleau (ETH Zürich/IRDL), C.C. Roth (ETH Zürich), B. Galpin (IRDL/CREC), D. Mohr (ETH Zürich)
12.20-12.40	<i>Simulation of a 1000 MPa Front Side Frame</i> S.H. Lee (University of Waterloo), M. Tummars (University of Waterloo), Michael Worswick (University of Waterloo), S. Malcolm (Honda Development and Manufacturing). Presented by C. Tolton (University of Waterloo)	<i>High strain-rate tests at high temperature in controlled atmosphere</i> A. Morena , M. Scapin, L. Peroni (Politecnico di Torino)
12.40-13.00	<i>Novel test for characterizing resistance spot weld group assemblies under shear loading</i> C. Tolton (University of Waterloo), J. Imbert-Boyd (University of Waterloo), M. Worswick (University of Waterloo), S. Malcolm (Honda Development and Manufacturing)	<i>A simple methodology to perform dynamic triaxial tests using split-Hopkinson bars</i> D. Kumar (Indian Institute of Technology Hyderabad/Swinburne University of Technology), S.N. Khaderi (Indian Institute of Technology Hyderabad/Swinburne University of Technology), D. Ruan (Swinburne University of Technology)
13.00-14.00	LUNCH	LUNCH

Session 9 - Structural crashworthiness, Impact/blast/measurement techniques, Stress waves, High-rate mechanical and forming processes, and Systems for protection Place: Trondhemssalen 1 - Chair: A. Benallal	
14.00-14.20	<i>Testing and modelling of aluminium rims under quasi-static and dynamic loadings</i> D. Morin , O.S. Hopperstad, M. Langseth (NTNU)
14.20-14.40	<i>Effect of Diaphragm on Pressure Profiles Generated in Shocktube</i> L. Gaur , R. Singh, T. Chakraborty (Indian Institute of Technology (IIT) Delhi)
14.40-15.00	<i>Theoretical predictions of dynamic necking formability of ductile metallic sheets with evolving plastic anisotropy and tension-compression asymmetry</i> M. Anil Kumar (UC3M) , K. E. N'souglo (UC3M), N. Hosseini (UC3M), N. Jacques (ENSTA) , J.A.Rodríguez Martinez (UC3M)
15.00-15.20	<i>A simple and computationally efficient stress integration scheme based on numerical approximation of the yield function gradients: Application to advanced yield criteria</i> N. Hosseini , J.A. Rodríguez-Martínez (UC3M)
15.20-15.40	<i>Impact of Power Transmission Lines by Powder Avalanches</i> O. Gorynina , P. Bartelt (WSL Institute for Snow and Avalanche Research SLF)
15.40-16.00	BREAK
Plenum: Invited lectures - Chair: M. Langseth	
16.00-16.30	<i>An explicit phase field method for dynamic fracture</i> H. Ren (Leibniz University), X. Zhuang (Leibniz University), C. Anitescu (Bauhaus University Weimar), T. Rabczuk (Bauhaus University Weimar)
16.30-17.00	<i>Dynamical Behaviour of Champagne Bubbles: from initiation to explosion</i> F. Moussy (Renault)
19.00-22.00	Banquet - Rockheim Museum

FRIDAY 17 JUNE 2022

Session 10 - Structural crashworthiness, Impact/blast/measurement techniques, Stress waves, High-rate mechanical and forming processes, and Systems for protection Place: Trondhemssalen 1 - Chair: D. Morin	
09.00-09.20	<i>Identification of armour technological solutions following experiment-simulation correlation</i> Y. Cosquer (ISAE-SUPAERO), P. Longère (ISAE-SUPAERO), O. Pantalé (LGP), C. Gailhac (CNIM Systèmes Industriels)
09.20-09.40	<i>On the Mechanical Properties of Tungsten Heavy Alloy at Low, Intermediate and High Strain Rates</i> C. Roth (ETH Zürich) Teresa Fras (ETH Zürich/ISL), D. Mohr (ETH Zürich)
09.40-10.00	<i>Experimental study on the response of sacrificial add-on armor</i> L. Blanc , D. Eckenfels, J.F. Legendre (ISL)
10.00-10.20	<i>The Treatment of Contact/Impact Problems in Rockfall Dynamics</i> A. Caviezel (WSL Institute for Snow and Avalanche Research SLF/CERC), J. Borner (WSL Institute for Snow and Avalanche Research SLF/CERC), A. Lanter (Geogrugg), P. Bartelt (WSL Institute for Snow and Avalanche Research SLF/CERC)
10.20-10.40	BREAK
10.40-11.00	<i>Numerical simulation of a climber fall: comparison of different models</i> M. Avalle (University of Genoa), A. Scattina (Politecnico di Torino)
11.00-11.20	<i>High strain-rate behavior of 316L architected materials manufactured by LMD-P and SLM</i> C. Buros (University of Bordeaux), P.Viot (Arts et Métiers), J.Lartigau (University of Bordeaux)
11.20-12.00	LUNCH

MOVED TO WEDNESDAY

CANCELLED