FSWP 2025

COIMBRA • PORTUGAL

Program

1 2 90 UNIVERSIDADE D COIMBRA

POLITÉCNICO DE LISBOA | POLYTECHNIC UNIVERSITY OF LISBON

POLITÉCNICO DE LEIRIA | ESCOLA SUPERIOR DE ARTES E DESIGN

ARISE Advanced Production and Intelligent Systems Associated Laboratory

CEMMPRE CENTRE FOR MECHANICAL ENGINEERING, MATERIALS AND PROCESSES

ISISE Institute for Sustainability and Innovation in Structural Engineering

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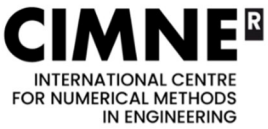


We acknowledge the precious support of all the sponsors!

Location

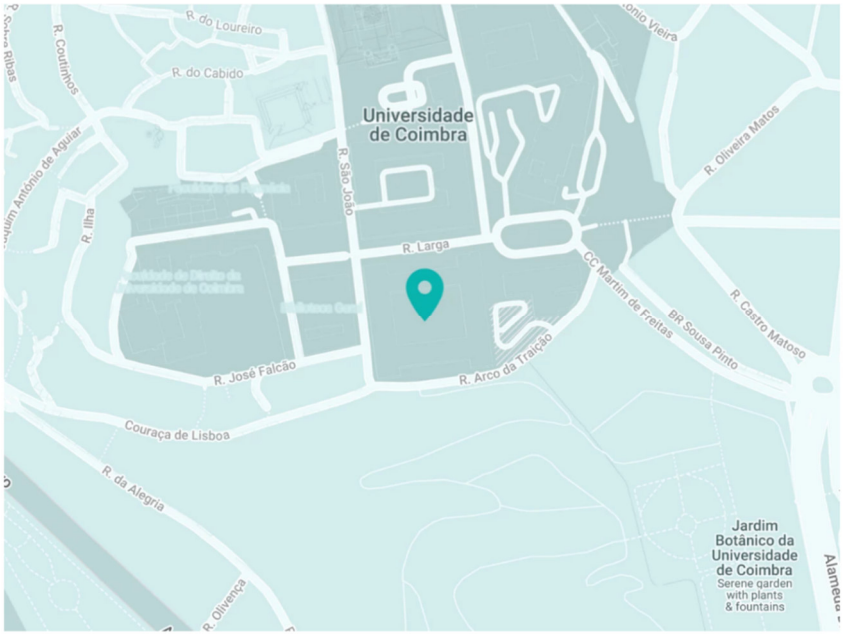
Rectory Auditorium

Rua Larga
3004-504 Coimbra

GPS: 40°12'27.90"N, 8°25'27.71"W

Public Transports: Bus Lines (SMTUC) 1A | 34 | 60 | 103
https://www.smtuc.pt/en/

Parking in Alta, next to the University of Coimbra, is quite complicated on weekdays and is constantly policed by the relevant authorities. Use the city's peripheral car parks and the public transport network available from them to get to the University of Coimbra Auditorium.



Key Info

Delegates should always keep their conference badge with them during the event, including the dinner and cultural visit.

Internet wireless

Wi-Fi name: mecanica2025@uc

Password: Mecanica2025#

Presentations

Each regular presentation will have a maximum time of 20 minutes, including Q&A (15 minutes + 5 minutes).

The files required for the presentation (PowerPoint or PDF) must be uploaded in the room where the presentation will take place during the last break before the session.

Lunches

Lunches will take place in the conference hall.

Dinner

Dinner will take place at the ***Tertúlia D'Eventos*** restaurant, at 20:00h.

Quinta da Insua
Azinhaga do Convento Velho
3040-252 Coimbra
GPS: N40º 12'3.212" O8º 25'51.516)

Program Overview

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Detailed Program

Wednesday 11 June 2025	
09:00-09:40	**Registration** **Hall**
09:40-10:00	**FSWP 2025 Opening** **Auditorium**
10:00-10:40	**Plenary Lecture** **Chair:** D. Andrade **Auditorium** *Friction stir processing towards high-performance aluminium alloys* **Aude Simar** (Université Catholique de Louvain, Belgium)
10:40-11:00	**Coffee Break**
	Session 1 **Chairs:** B. Klusemann and S. Chevret
	Auditorium
11:00-11:20	*Ultra-high speed friction stir lap welding of aluminum alloys for automotive electrification* **Y. Hovanski** (Brigham Young University, USA), T. Lainhart, J. Sheffield, J. Coyne
11:20-11:40	*Industrial production of thick-walled and highly loaded aluminium structures for railroad applications with FSW* **I. Golubev** (RIFTEC GmbH, Geesthacht, Germany), A. Meyer
11:40-12:00	*FSW on aerospace propellant tank: process parameters and fixture development* B. Cognet , **L. Giraud** (TRA-C Industrie, France), T. Jøraholmen, K. E. Snilsberg
12:00-12:20	*Machining and FSW of 3D geometry fuselage panels for aluminium aerostructures* **R. Stricher** (Institut de Soudure, France), S. Floch, H. Robe, C. Duval, G. Besson
12:20-12:40	*Welding gun design and applications for flexible friction stir stitch welding in car body engineering* **D. Walz** (University of Stuttgart, Germany), M. Werz, S. Weihe
12:40-13:00	*Where is friction stir welding taking us? A review of European space applications* **J. Gandra** (European Space Agency, The Netherlands)
13:00-14:00	**Lunch**

	Session 2A **Chairs:** A. Meyer and H. Fujii	Session 2B **Chairs:** H. Schmidt and J. V. Mendez
	Auditorium	**Room 1**
14:00-14:20	*Friction Stir Welding with filler material to create a high-quality seam elevation in the industrial series production* **B. Richter** (Richter Consulting, Germany), S. Fröhlke	*Heat transfer simulation of stationary shoulder friction stir welding on an AA6061 aluminium alloy* **T. Fajwisiewicz** (Université de Lyon, France), M. Guillo, G. Racineux, J. C. Roux, E. Feulvarch
14:20-14:40	*Effect of pin length on the lap friction stir welding of a TRIP steel grade with a Ni filler* **M.-N. Avettand-Fènoël** (Université de Lille, France), T. Nagaoka, R. Taillard	*Predicting interlayer bonding trends in additive friction stir deposition of a high strength aluminum alloy using smoothed particle hydrodynamics* **T. R. Hickok** (Baylor University, USA), N. Palya, D. Van Iderstine, S. Mujahid, K. Fraser, H. Rhee, J.B. Jordon, P. G. Allison
14:40-15:00	*A multi-steps approach for FSW tool optimisation: a design and material study* **H. Robe** (Institut de Soudure, France), R. Gaben	*High Accurate FSW Robot: 2D and 3D applications* **M. Guillo** (Institut Maupertuis, France)
15:00-15:20	*Friction Stir Welding: a game changer for thermal efficiency and cost reduction of cold plates* **L. Dubourg** (Stirweld, France)	*Embedded domain method to tackle complex pin-tool geometries and tilt angles in FSW problems* **H. Venghaus** (Polytechnic University of Catalonia, Spain), M. Chiumenti, J. Baiges, D. Juhre, N. Dialami
15:20-15:40	*Development and testing of 3D printed FSW tool* **E. Kozák** (John von Neumann University, Hungary), Z. Kovács	*Modelling friction surfacing via a GPU-based Smoothed Particle Hydrodynamics framework* A. Elbossily, Z. Kallien, R. Chafle, K. A. Fraser, M. Afrasiabi, M. Bambach, **B. Klusemann** (Leuphana University Lüneburg, Germany)
15:40-16:00	**Coffee Break**	
16:00-16:20	*Stir zone microstructure development in the AA5083–AA7075 friction stir welds depending on tool geometry* **I. Kalemba-Rec** (University of Krakow, Poland), C. Hamilton, M. Wróbel, M. Kopyściański, A. Zięba	*Experimental and numerical investigations of mixing mechanisms in a complex welded joint obtained by friction stirring* **E. R. Oprescu** (ENSTA Bretagne, France), A. Gogorici, E. L. Nitu, M. Diakhate, C. Badulescu
16:20-16:40	*Improving mechanical properties of AA2219 semi-stationary bobbin tool friction stir welds via post-weld heat treatment* G. N. Rezende, M. Bernardi (Helmholtz-Zentrum Hereon Germany), M. Hoffmann, L. Bergmann, G. Zepon**, B. Klusemann (**Leuphana University Lüneburg, Germany)	*Multi-objective optimization of Refill Friction Stir Spot Welding parameters for AA2024-T3 aluminum alloy: An integrated approach using ANOVA, Machine Learning, and NSGA-II* **P. Myśliwiec** (Rzeszow University of Technology, Poland), A. Kubit
16:40-17:00	*Influence of aluminium grade on FSW tool wear* **M. Lambert-Cellier** (TRA-C Industrie, France), L. Giraud, Y. Guan, A. C. P. Rodrigues, V. Fridrici	*Development of a 3D flow modelling framework for FSW* **H. B. Schmidt** (HBS Engineering, Denmark)
17:00:17:20	*High-speed friction stir lap welding of aluminum alloys by spiral staircase-shaped tool*	*Properties of 7075 aluminium chips deposition produced by multilayer friction surfacing*

	Y. Morisada (Osaka University, Japan), M. Mukuda, N. Haradab, H. Fujii	**M. Jadot** (Université Catholique de Louvain, Belgium), M. B. Lezaack, A. Simar
17:20-17:40	*Investigation on Friction Stir Welding of high strength low alloy (HSLA) steel using tungsten base alloy tools* **V. Balasubramanian** (Annamalai University, India), S. Malarvizhi, S. R. Nathan, A. G. Rao	*Influence of tool rotation speed and advance on weld morphology and geometry in friction stir welding (FSW) process in aluminum alloy AA 6061-T6* **J. R. S. Moreno** (Universidade Tecnológica Federal do Paraná, Brazil), C. A. Correa

Thursday 12 June 2025

09:00-09:20	**Registration** **Hall**	
09:20-10:00	**Plenary Lecture** **Chair:** C. Leitão **Auditorium** *FSW for hydrogen storage tanks* **Elizabeth Hoyos** (TWI, United Kingdom)	
	Session 3A **Chairs:** M. N. Avettand-Fènoël and J. Gandra	**Session 3B** **Chairs:** Y. Morisada and T. Bor
	Auditorium	**Room 1**
10:00-10:20	*Intermetallic size effect on strength and failure mechanism in dissimilar titanium and aluminium welds processed by Friction Melt Bonding* **S. C. Krishnamurthy** (Université Catholique de Louvain, Belgium), T. Sapanathan, A. Simar	*A Study of process-microstructure-property relationships in Ti-6Al-4V Alloy via Additive Friction Stir Deposition (AFSD)* **I. Z. Kolimi** (Université de Technologie de Compiègne, France), J. Marteau, S. Bouvier, P. Auguste, F. Lefebvre, E. Nivet
10:20-10:40	*Heat input and material plastic flow impact on residual stress distribution in dissimilar titanium and aluminium joints produced by two friction welding techniques* **L. Malaske** (Leuphana University Lüneburg, Germany), S. C. Krishnamurthy, T. Sapanathan, S. Ryeland, T. Pirling, A. Simar, B. Klusemann	*Exploring the feasibility of Friction Screw Extrusion Additive Manufacturing for AA7075 aluminum alloy* **S. S. Rezaeinejad** (University of Twente, The Netherlands), R.J. Boesjes, T.C. Bor, M. Luckabauer, R. Akkerman
10:40-11:00	**Coffee Break**	
11:00-11:20	*Comparative study of multi-layer Friction Surfacing in 7075 and 2017 aluminum alloys* **J. Vivas** (LORTEK Technological Centre, Spain), L. García-Sesma, M. Chludzinski, O. Zubiri, E. Aldanondo	*Friction screw extrusion of heat-treatable Al-Mg-Si alloy* N. Masselink, **T. Bor** (University of Twente, The Netherlands), M. Luckabauer , R. Akkerman

11:20-11:40	*Implementation of the FMB process on a robot: A case study on overlap welding of mild steel and aluminum* M. Lucas, A. B. Aleman, **S. Chevret** (Université De Lorraine, France), D. Noizillier, S. Mathieu, S. Ryelandt, A. Simar	*Additive Friction Stir Deposition of metal matrix composites for in-space manufacturing via in situ resource utilization* C. Ritter, A. Swinney, C. Baker, P. G. Allison, J. B. Jordon, **T. J. Fleck** (Baylor University, USA)
11:40-12:00	*The use of ultra-hard, super-materials for the high speed friction stir welding of steel and aluminium* **B. Dzepina** (Element Six, United Kingdom), M. Hackett, R. Townsend, S. Ghosh, M. Matsushita	*Additive manufacturing in the solid state: Wire-based friction stir additive manufacturing* **S. Donaubauer** (University of Stuttgart, Germany), M. Werz
12:00-12:20	*Strain flow localization across the dissimilar friction stir joints between AA6061-T6 and AA7075-T6 alloys during tensile loading* N. Dimova, T. Sapanathan, **F. Khodabakhshi** (Université Catholique de Louvain, Belgium), S. Krishnamurthy, J. Benoist, E. Charkaluk, A. Simar	*Study of the use of FSE solid state recycled wires for fusion welding and WAAM process* **G. H. S. F. L. Carvalho** (University of Florence, Italy), B. Silva Cota, G. Campatelli, G. Buffa
12:20-12:40	*Friction stir welding of high strength Aluminium-Lithium 2050 alloy: Computed X-rays tomography correlated to weld efficiency* **M. Lezaack** (Université Catholique de Louvain, Belgium), P. Dufour, G. Pyka, A. Simar	*Effect of welding speed on the mechanical properties and microstructural evolution of FSWed Haynes 282 Ni superalloy* **A. Sharma** (Osaka University, Japan), Y. Morisada, K. Ushioda, S. Singh, H. Fujii
12:40-14:00	**Lunch**	
14:00-17:30	**Social Program – Cultural Visit**	
20:00-23:00	**Conference Dinner**	

Friday 13 June 2025

09:00-09:20	**Registration** **Hall**	
09:20-10:00	**Plenary Lecture** **Chair:** I. Galvão **Auditorium** *Advancing Refill Friction Stir Spot Welding towards production* **Yuri Hovanski** (Brigham Young University, USA)	
	Session 4A **Chairs:** V. Balasubramanian and A. Loureiro	**Session 4B** **Chairs:** L. Giraud and H. Robe
	Auditorium	**Room 1**

10:00-10:20	*Application of dissimilar FSW to achieve graded structures: Optimization of processing parameters to extend intermixing* **C. Grandjean** (Université de Lille, France), X. Sauvage, M. Lezaack, M. N. Avettand-Fènoël	*Aluminium matrix composites manufactured via Friction Stir Processing method – microstructure and mechanical properties evolution* **M. Lipińska** (Warsaw University of Technology, Poland), F. Pixner, A. Huetter, N. Enzinger, M. Lewandowska
10:20-10:40	*Optimisation of Friction Stir Welding parameters for enhancing thermal conductivity and electrical resistance in dissimilar AA5083-copper joints* **G. Karrar** (University of Strathclyde, United Kingdom), A. Galloway, A. Toumpis, H. Li, B. Irungu, S. Goel	*Internal stress distribution in friction stir processed AA7075 alloy reinforced by NiTi particles* N. Netto, **F. Khodabakhshia** (Université Catholique de Louvain, Belgium), F. Hannard, L. Zhao, M. Coulombier, E. Charkaluk, A. Simar
10:40-11:00	**Coffee Break**	
11:00-11:20	*Microstructure evolution of dissimilar Friction Stir Welding of 1050Al alloy to AZ31 Mg alloy* **S. M. Fatemi** (Universitat Politècnica de Catalunya, Spain), L. Calvo, M. Amigo, J. A. Muñoz, J. M. Cabrera	*Insight into solid-state layer deposition of aluminum via Friction Surfacing* **Z. Kallien** (Leuphana University Lüneburg, Germany), M. Hoffmann, B. Klusemann
11:20-11:40	*Improving corrosion resistance of friction stir welded dissimilar joints of aluminium – magnesium alloys by Micro Arc Oxidation (MAO) coatings* **S. Malarvizhi** (Annamalai University, India), V. Balasubramanian, R. K. Jayaraj	*High-performance aluminium-polymer joints produced by Friction Stir Spot Welding* **M. A. R. Pereira** (University of Coimbra), I. Galvão, J. D. M. Costa, A. M. Amaro, R. M. Leal
11:40-12:00	*Recent advances in the refill Friction Stir Spot Welding of ferrous and aluminum dissimilar alloys* **C. C. Castro** (Leuphana University Lüneburg, Germany), T. Shen, V. H. M. M. Ferreira, L. B. Kuba, A. V. B. Souza, G. Y. Koga, B. Klusemann	*Optimization and standardization of FSP/FSW techniques for repairing high-temperature material sub-assemblies in mining sector heavy equipment* **P. Kumar** (Coal India Limited, India), P. Rai, R. Mishra, M. Vashista, M. Z. K. Yusufzai
12:00-12:20	*Advances in process robustness and weld quality in Friction Stir Welding of hybrid aluminum-steel tailor welded blanks* **R. Göbel** (University of Stuttgart, Germany), S. Weihe, M. Werz	*Feasibility study of new interlocking strategies for welding multi-materials aluminium-polymer composites by Robotic Friction Stir Welding (R-FSW) technology* **M. A. Leal** (Cetemet, Spain), A. F. Martin, M. P. Cintas, J. Ureña
12:20-12:40	*Assessing joint integrity and thickness limits in pinless Friction Stir Spot Welding of high-strength steels* **D. Andrade** (University of Coimbra, Portugal), C. Leitão, D. M. Rodrigues	
12:40-14:00	**Lunch**	

Session 5

Chairs: L. Bergmann and Z. Kovacs

Auditorium

14:00-14:20	*Impact of welding on the microstructure and surface reactivity of AA2XXX Friction Stir Welds* **I. Bidon** (Airbus, France), P. Loison, L. Couturier, P. Paillard
14:20-14:40	*Interlocking strategies in dissimilar joints: A comparative study between additive manufacturing and friction stir spot welding* **T. Abreu** (University of Coimbra, Portugal), M. A. R. Pereira, J. D. M. Costa, A. M. Amaro, C. Leitão, R. M. Leal, I. Galvão
14:40-15:00	*Microstructure and mechanical properties of Friction Stir Welded T-joints of AA 2219* D. Wagner, M. Bernardi, F. Grassel, T. Chen, **L. Bergmann** (Helmholtz-Zentrum Hereon, Germany), B. Klusemann
15:00-15:20	*Mechanical grooving: A Surface pretreatment for enhancing metal-composite Friction Stir Spot Welding* **M. A. R. Pereira** (University of Coimbra, Portugal), I. Galvão, J. D. M. Costa, A. M. Amaro, R. M. Leal
15:20-15:40	**FSWP 2025 Closing**
15:40-16:00	**Coffee Break**