

# PROGRAM THURSDAY, JUNE 15<sup>TH</sup> MORNING

## LATER REGISTRATION

8.50 - 9.20 am	<b>OPENING SESSION (THEATER)</b> Prof. Michel Jauzein, Director of Arts et Metiers, Campus of Cluny Prof. Ivan Iordannof, General Director of Research & Innovation of Arts et Metiers Prof. Gérard Poulachon, Director of LaBoMaP Laboratory
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9.20 - 10.20 am	<b>PLENARY SESSION (THEATER)</b> Plenary Session 1: Importance of Machining and Additive Manufacturing for Aircraft Engines Vincent Dessoly, Safran Aircraft Engines Plenary Session 2: Manufacturing Process Simulation Focus on Automotive Industry: an Overview of Current and Future R&D Works, Applied to Powertrain in Renault Group, Théo Dorlin, Renault SA Chairman: J. C. Outeiro
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## 10.20 - 11.20 am COFFEE-BREAK, STAND & POSTER SESSION A (Pyramid) / EXHIBITIONS (Laboratories)

	CLITON ROOM	FONTAINE ROOM	MERCHANT ROOM	ZIMBERLIN ROOM
	Cutting Fundamentals Chairman: I.S. Jawahir	Precision and Micro Machining Chairman: T. Matsumura	Monitoring and Diagnostics Chairman: H.-C. Möhring	Dynamic and Stability Chairman: E. Budak
11.20 - 11.40 am	<b>Method of hole shrinkage radial forces measurement in Ti6Al4V drilling</b> J. Merzouki, G. Poulachon, F. Rossi, Y. Ayed, G. Abrivard	<b>Mechanistic Force and Burr Modeling in High-speed Microdrilling of Ti6Al4V</b> Ri. K. Mittal, S. Yadav, R. K Singh	<b>Modelling of pocket milling operation considering cutting forces and CNC control inputs</b> A. Ozcan, E. Rivière-Lorphèvre, H.i Nam Huynh, F. Ducobu, O. Verlinden, E. Filippi	<b>Investigation of process damping effect for multi-mode milling systems</b> M. Yaser, T.Lutfi Taner, B. Erhan
11.40 - 12.00 pm	<b>Influence of Microstructure on Chip Formation when Broaching Ferritic- Pearlitic Steels</b> T. Mabrouki, C. Courbon, D. Fabre, I. Arrieta, P.-J. Arrazola, J. Rech	<b>Surface generation modelling for micro-end milling considering the minimum chip thickness and tool runout</b> W. Chen, D. Huo, X. Teng, Y. Sun	<b>Sound Analysis in Drilling, Frequency and Time Domains</b> A. Parsian, M. Magnevall, T. Beno, M.Eynian	<b>Tool orientation optimization for reduction of vibration and deformation in ball-end milling of thin-walled impeller blades</b> T. Huang, X.-M. Zhang, H. Ding
12.00 - 12.20 pm	<b>An investigation of temperature and heat partition on tool-chip interface in milling of difficult-to-machine materials</b> C. Di, Z. Dinghua, W. Baohai, L. Ming	<b>SWARM optimization of force model parameters in micromilling</b> A. Attanasio, E. Ceretti, C. Giardini	<b>Online Condition Monitoring Tool for Automated Machinery</b> M. Engeler, A.Elmiger, A.Kung, D. Zogg, K. Wegener	<b>Chatter suppression of external grooving tools</b> J. Saffury
12.20 - 12.40 pm	<b>Experimental study of strain field evolution during milling process</b> D. Zhang, X.-M. Zhang, D. Chen, J. Leopold, H. Ding	<b>Component Mode Synthesis Approach for Micro End Mill Dynamics Considering Machine Tool Compliance</b> K. K. Singh, V. Kartik, R. Singh	<b>Model-based online tool monitoring for hobbing processes</b> F. Klocke, B. Döbbeler, S. Goetz, T. Deeke Viek	<b>Control of a multi degrees functional redundancies robotic cell for 4C optimization of the machining stability</b> S. Mousavi, V. Gagnol, B. Bouzgarrou, P. Ray

## 12.40 - 2.20 pm LUNCH & STAND / EXHIBITIONS (Laboratories)

# PROGRAM THURSDAY, JUNE 15<sup>TH</sup> AFTERNOON

	CLITON ROOM	FONTAINE ROOM	MERCHANT ROOM	ZIMBERLIN ROOM
	<b>Surface Integrity</b> Chairman: M. Nasr	<b>Grinding and Abrasive Processes</b> Chairman: L. Settineri	<b>Non-Conventional Process</b> Chairman: E. Govekar	<b>Dynamics and Stability</b> Chairman: P. Lorong
2.20 - 2.40 pm	<b>An enhanced analytical method for residual stress prediction in peripheral milling</b> X. Huang, X. Zhang, H. Ding	<b>Cut-off grinding of hardened steel wires - modeling of heat distribution</b> M. Putz, M. Cardone, M. Dix	<b>Inverse Simulation of Heat Source in Electrical Discharge Machining (EDM)</b> F. Klocke, S. Schneider, M. Mohammadnejad, L. Hensgen, A. Klink	<b>Stiffness and damping properties of a swing clamp: model and experiment</b> L. T. Nguyen, H.-C. Mohring
2.40 - 3.00 pm	<b>Effect of hot burnishing aided by infrared radiation on the modification of surface and subsurface of AISI 1045</b> L.E.A. Sanchez, F. Giaretta, L. G. Nogueira, R. R. Ingraci Neto	<b>An analytical method for prediction of material deformation behavior in grinding using single grit analogy</b> D. Setti, Benjamin Kirsch, J.C. Aurich	<b>Flushing-Induced Thermal Cooling Including Debris Transport in Electrical Discharge Machining</b> G.B. Gadeschi, S. Schneider, M. Mohammadnejad, M. Meinke, A. Klink, W. Schröder, F. Klocke	<b>Dynamic deformation of thin-walled plate with variable thickness under moving milling force</b> J. Shi, J. Gao, Q. Song, Z. Liu, Y. Wan
3.00 - 3.20 pm	<b>Microstructure Simulations for Orthogonal Cutting via a Cellular Automaton Model</b> N. Shen, A. Samanta, H. Ding	<b>Numerical simulation of grinding with realistic representation of grinding wheel and workpiece movements: a finite volumes study</b> J. Kundrák, A. P. Markopoulos, N. E. Karkalos	<b>Modeling of the Electrochemical Dissolution Process for a Two-phase Material in a Passivating Electrolyte System</b> F. Klocke, S. Harst, F. Karges, M. Zeis, A. Klink	<b>Modeling of force build-up process and optimization of tool geometry when intermittent turning</b> O. Gutnichenko, A. Agic, J.-E. Ståhl
3.20 - 3.40 pm	<b>On superficial hardness in complex cutting process</b> S. M. Croitoru, V. Majstorovic	<b>Estimation of Dynamic Grinding Wheel Wear in Plunge Grinding</b> M. Ahrens, J. Damm, M. Dagen, B. Denkena, T. Ortmaier	<b>Characterization of an Electrochemical Machining Process for Precise Internal Geometries by Multiphysics Simulation</b> M. Hackert-Oschätzchen, R. Paul, M. Kowalick, D. Kuhn, G. Meichsner, M. Zinecker, A. Schubert	<b>Cutting force model in milling with cutter runout</b> T. Matsumura, S. Tamura
3.40 - 4.20 pm	<b>COFFEE-BREAK, STAND &amp; POSTER SESSION A (Pyramid) / EXHIBITIONS (Laboratories)</b>			
	<b>Surface Integrity</b> Chairman: R. M'Saoubi	<b>Tool Wear and Machinability</b> Chairman: A. Attanasio	<b>Machine Tool</b> Chairman: O. Horejs	<b>Machining of Complex Surfaces</b> Chairman: D. Prat
4.20 - 4.40 pm	<b>Numerical and empirical modelling of machining-induced residual stresses in ball end milling of Inconel 718</b> J. Wang, D.Zhang, B.Wu, M.Luo	<b>Characterisation and modelling of the machinability of ferritic-pearlitic steels in drilling operations</b> M. Abouridouane, F. Klocke, B. Döbbeler	<b>Application of substructure techniques to predict cutting stability for mobile machine tools</b> H. Rentsch, M. Kolouch, M. Putz	<b>Comparison of modeling methods to determine cutting tool profile for conventional and synchronized whirling</b> F. Zanger, V. Sellmeier, J. Klose, M. Bartkowiak, V. Schulze
4.40 - 5.00 pm	<b>Influence of the cutting edge microgeometry on the surface integrity during mechanical surface modification by Complementary Machining</b> M. Gerstenmeyer, B.-L. Ort, F. Zanger, V. Schulze	<b>A coupled Eulerian Lagrangian model to predict fundamental process variables and wear rate on ferrite-pearlite steels</b> M. Saez-de-Buruaga, J.A. Esnaola, P. Aristimuno, D. Soler, T. Björk, P.J. Arrazola	<b>Modelling of cutting process impact on machine tool thermal behaviour based on experimental data</b> M. Mareš, O.Horej	<b>Discrete Cutting Force Model for 5-Axis Machining with Arbitrary Engagement and Feed Direction</b> L. Berglind, D. Plakhotnik, E. Ozturk
5.00 - 5.20 pm	<b>Part Distortion Modeling on Aluminum Slender Structural Components for Aeronautical Industry</b> I. Llanos, J. L. Lanzagorta, A. Beristain	<b>Using the SPH method to better capture wear in machining</b> N. Stenberg, A. Delic, T. Bjork	<b>Improved Dynamic Characteristics for Machine Tools Structure Using Filler Materials</b> H. Sonawane, T Subramanian	<b>The Effect of Linear Guide Representation for Topology Optimization of a Five-axis Milling Machine</b> E. Yüksel, E. Budak, A. S. Ertürk
5.20 - 5.40 pm	<b>Thermodynamics-Based Interpretation of White Layer Formation in Metal Cutting</b> S. Buchkremer, F. Klocke, B. Döbbeler, M. Abouridouane, M. Meurer	<b>Wear estimation of coated tool using XFEM / level set function</b> I. Bencheikh, F. Bilteyst, M. Nouari, H. Makich	<b>Investigation of the evolution of modal behavior of HSM spindle at high speed</b> C. Rabreau, M. Ritou, S. Le Loch, B. Furet	<b>Modeling thread milling forces in mini-hole in dental metallic materials</b> A.C. Araujo, G. Fromentin
5.40 - 7.00 pm				
7.00 - 11.00 pm	<b>CONFERENCE DINER (FARINIER)</b>			

# PROGRAM FRIDAY, JUNE 16<sup>TH</sup> MORNING

8.30 - 9.00 am LATER REGISTRATION				
	CLITON ROOM	FONTAINE ROOM	MERCHANT ROOM	ZIMBERLIN ROOM
	Numerical and Analytical Modeling Chairman: D. Umbrello	Tool Wear and Machinability Chairman: R. Singh	Machine-Tool Chairman: F. Pusavec	Material Behavior and Tribological Aspects Chairman: S. Melkote
9.00 - 9.20 am	<b>Innovative Lagrangian Model of Broaching to reduce CPU Time</b> D. Fabre, C. Bonnet, J. Rech, T. Mabrouki	<b>FEM simulation of tool wear in drilling</b> A. Attanasio, F. Faini, J.C. Outeiro	<b>Modelling of robotic drilling</b> S. Garnier, K. Subrin, K. Waiyagan	<b>Thermomechanical coating load in dependence of fundamental coating properties</b> S. Beblein, B. Breidenstein, B. Denkena, C. Pusch, H. Hoche, M. Oechsner
9.20 - 9.40 am	<b>Experimental and numerical investigation of burr formation in intermittent turning of AISI 4140</b> H. Persson, M. Agmell, V. Bushlya, J.-E. Ståhl	<b>Wear and thermal analysis of WC inserts in turning operations by fuzzy modeling</b> G.C. Silva, B.M. Malveira, J.R.G. Carneiro, P.P. Brito, T.A. Silva	<b>Optimization of high speed machine tool spindle to minimize thermal distortion</b> S. N. Grama, A. Mathur, R. Aralaguppi, T. Subramanian	<b>Simulative investigations on different friction coefficient models</b> F. Zanger, P. Bollig, V. Schulze
9.40 - 10.00 am	<b>Cutting simulations using a commercially available 2D/3D FEM software for forming</b> E. Segebade, M. Gerstenmeyer, F. Zanger, V. Schulze	<b>Effects of cutting parameters and disturbances over turning of UDIMET 720 superalloy in a broaching process simulation</b> Q. Bonnardel, V. Wagner, G. Dessein, V. Dutilh, S. Mandrile	<b>A finite element analysis of air bearings applied in compact air bearing spindles</b> C. Müller, S. Greco, B. Kirsch, J. C. Aurich	<b>In-process measurement of the coefficient of friction on titanium</b> L. Meier, N. Schaal, K. Wegener
10.00 - 10.50 am COFFEE-BREAK, STAND & POSTER SESSION B (Pyramid) / EXHIBITIONS (Laboratories)				
	Numerical and Analytical Modeling Chairman: P.J. Arrazola	High-Performance Machining Chairman: G. Germain	Grinding and Abrasive Processes Chairman: F. Salvatore	Material Behavior and Tribological Aspects Chairman: V. Schulze
10.50 - 11.10 am	<b>Cutting simulation with consideration of the material hardening in the shear zone of AISI 1045</b> E. Uhlmann, S. Henze, K. Brömmelhoff, W. Reimere	<b>Design of Serrated End Mills for Improved Productivity</b> F. Tehranizadeh, E. Budak	<b>Molecular dynamics model of nano-metric peripheral grinding</b> N. E. Karkalos, A. P. Markopoulos, J. Kundrák	<b>Material testing and chip formation simulation for different heat treated workpieces of 51CrV4 steel</b> A. Zabel, T. Rödder, M. Tiffe
11.10 - 11.30 am	<b>An Evaluation of Different Damage Models when Simulating the Cutting Process Using FEM</b> M.N.A. Nasr, M.M.A. Ammar	<b>Simulation studies of turning of aluminium cast alloy using PCD tools</b> T. Fraga da Silva, R.B. Soares, A.M.P. Jesus, P.A.R. Rosa, A. Reis	<b>Experimental and numerical study of media action during tribofinishing in the case of SLM titanium parts</b> F. Salvatore, F. Grange, R. Kaminski, C. Claudin, G. Kermouche, J. Rech, A. Texier	<b>Dislocation Density Based Material Model Applied in PFEM-simulation of Metal Cutting</b> J. M. Rodriguez, P. Jonsen, A. Svoboda
11.30 - 11.50 am	<b>2D and 3D finite element models for the edge trimming of CFRP</b> N. Duboust, C. Pinna, H. Ghadbeigi, S. Ayvar-Soberanis, V.A Phadnis, A. Collis, K. Kerrigan		<b>A study of the interaction between coolant jet nozzle flow and the airflow around a grinding wheel in cylindrical grinding</b> C. Baumgart, J. J. Radziwill, F. Kuster, K. Wegener	<b>Determination of material resistance characteristics in cutting</b> V. Kushnera, M. Storchak
11.50 - 1.40 pm LUNCH & STAND / EXHIBITIONS (Laboratories)				

# PROGRAM FRIDAY, JUNE 16<sup>TH</sup> AFTERNOON

	CLITON ROOM	FONTAINE ROOM	MERCHANT ROOM	ZIMBERLIN ROOM
	<b>Numerical and Analytical Modeling</b> Chairman: M. Abouridouane	<b>Cutting Fundamentals</b> Chairman: J.-E. Ståhl	<b>Thermals Effects</b> Chairman: I. Lazoglu	<b>Material Behavior and Tribological Aspects</b> Chairman: M. Calamaz
1.40 - 2.00 pm	<b>The CEL method as an alternative to the current modelling approaches for Ti6Al4V orthogonal cutting simulation</b> F. Ducobu, P.-J. Arrazola, E. Rivière-Lorphèvre, G. Ortiz de Zarate, A. Madariaga, E. Filippi	<b>Mechanism of serrated chip formation in cutting process using digital image correlation technique</b> W.-J. Xu, X.-M. Zhang, J. Leopold, H. Ding	<b>Heat flux density distribution differences in four machining processes of AISi7 block: MQL drilling, tapping, reaming and dry milling</b> S. Han, P. Faverjon, F. Valiorgue, J. Rech	<b>Material testing of copper by extrusion-cutting</b> F. Segalina, L. De Chiffre
2.00 - 2.20 pm	<b>Prediction of the cutting forces and chip morphology when machining the Ti6Al4V alloy using a microstructural coupled model</b> D. Yameogo, B. Haddag, H. Makich, M. Nouari	<b>The influence the uncut chip thickness has on the stagnation point in orthogonal cutting</b> M. Agmell, D. Johansson, S. Va Laakso, A. Ahadi, J.-E. Ståhl	<b>Heat sources and fluxes in milling: Comparison of numerical, analytical and experimental results</b> M. Putz, C. Oppermann, M. Bräunig, U. Karagüzel	<b>The effect of material parameters on chip formation in orthogonal cutting simulation of Ti-5553 Alloy</b> M. Ozkutuk, Y. Kaynak
2.20 - 2.40 pm	<b>FE-simulation of the cutting process under consideration of cutting fluid</b> F. Klocke, B. Döbbeler, B. Peng, T. Lakner		<b>Computational and experimental inverse problem approach for determination of time dependency of heat flux in metal cutting</b> V. Kryzhanivskyy, V. Bushlya, O. Gutnichenko, R. M'Saoubi, J.E. Ståhl	<b>Validation of Material Models for Machining Simulation Using Mechanical Properties of the Deformed Chip</b> P. Fernandez-Zelaia, S.N. Melkote
2.40 - 3.30 pm	<b>COFFEE-BREAK &amp; STAND (Pyramid) / EXHIBITIONS (Laboratories)</b>			
	<b>Numerical and Analytical Modeling</b> Chairman: Y. Kaynak	<b>Non-Conventional Processes</b> Chairman: P. Rosa	<b>Thermal Effects</b> Chairman: A. Zabel	<b>Material Behavior and Tribological Aspects</b> Chairman: J. Rech
3.30 - 3.50 pm	<b>Modelling the thermo-mechanical behavior of a redesigned tool holder to reduce the component geometrical deviations in cryogenic machining</b> M. F. Novella, S. Sartori, M. Bellin, A. Ghiotti, S. Bruschi	<b>Multiscale multiphysics simulation of a pulsed electrochemical machining process with oscillating cathode for Microstructuring of impact extrusion punches</b> I. Schaarschmidt, M. Zinecker, M. Hackert-Oschätzchen, G. Meichsner, A. Schubert	<b>Modelling of tool temperature in modulation-assisted machining</b> Y. Gao, J. B. Mann, S. Chandrasekar, R. Sun, J. Leopold	<b>Cutting simulations of two gear steels with microstructure dependent material laws</b> M. Abouridouane, G. Laschet, V. Kripak, A. Teixeira, J. Dierdorf, U. Prahl, F. Klocke
3.50 - 4.10 pm	<b>Machining simulation of Ti6Al4V under dry and cryogenic conditions</b> S. Imbrogno, S. Sartori, A. Bordin, S. Bruschi, D. Umbrello	<b>Experimental Investigation of Ultrasonic-Assisted Milling of Soda Glass Using Factorial Design of Experiments</b> Y. El-Taybany, M. Hossam, H. El-Hofy	<b>Mechanical and thermal modeling of orthogonal turn-milling operation</b> U. Karagüzel, M. Bakkal, E. Budak	<b>Friction model for tool / work material contact applied to surface integrity prediction in orthogonal cutting simulation</b> L. A. Denguir, J. C. Outeiro, J. Rech, G. Fromentin, V. Vignal, R. Besnard
4.10 - 4.30 pm	<b>A 3D FE modeling of machining process of Nomex honeycomb core: influence of the cell structure behaviour and specific tool geometry</b> M. Jaafar, S. Atlati, H. Makich, M. Nouari, A. Moufki, B. Julliere	<b>Discrete element model of an abrasive water-jet through the focal canon to the workpiece</b> R. Laniel, O. Bouchareb, A. Brient, M. Miroir	<b>Effects of model reduction on simulated temperature fields in milling</b> L. Langenhorst, M. Gulpak, J. Sölter, O. Riemer	<b>Friction Coefficients on Surface finish of AlTiN Coated Tools in the Milling of Ti6Al4V</b> M. Akmal, S. Ehsan Layegh K, I. Lazoglu, A. Akgün, Ç. Yavaş
4.30 - 4.45 pm	<b>CLOSING SESSION (CLITON ROOM)</b> I.S. Jawahir (University of Kentucky, USA) E. Ozturk (AMRC with Boeing, Sheffield, UK) - Proposal to organise the CMMO in 2019 at Sheffield, UK A. Jesus (University of Porto, Portugal) - Proposal to organise the CMMO in 2021 at Porto, Portugal			

## POSTER SESSION THURSDAY, JUNE 15<sup>TH</sup>

### POSTER SESSION A

**A Sensitivity Analysis on the Effect of Laser Power on Residual Stresses when Laser-assisted Machining AISI 4340**  
M. Balbaa, M.N.A. Nasr, H. Elgamal

**Microstructure-based FEM simulation of metal cutting**  
M. Abouridouane, F. Klocke, A. Oktafiani, B. Döbbeler

**Kinematic hardening of AISI 5120 during machining operations**  
A. Fellmeth, F. Zanger, V. Schulze

**An analytical approach for machining thin-walled workpieces**  
M. Masmali, P. Mathew

**Micro-cutting of Ti-6Al-4V parts produced by SLM process**  
G. Le Coz, M. Fischer, R. Piquard, A. D'Acunto, P. Laheurte, D. Dudzinski

**A new methodology for evaluation of mechanical properties of materials at very high rates of loading**  
T. Santos, J.C. Outeiro, R. Rossi, P. Rosa

## POSTER SESSION FRIDAY, JUNE 16<sup>TH</sup>

### POSTER SESSION B

**Finite element modeling and validation of chip segmentation in machining of AISI 1045 steel**  
A. Devotta, T. Beno, R. Siriki, R. Löf, M. Eynian

**Analysis of the frictional heat partition in sticking-sliding contact for dry machining: an Analytical-FE modelling**  
Y. Aevor, A. Moufki, M. Nouari

**Tribological behavior of PVD hard coated cutting tools under cryogenic cooling conditions**  
M. Yousfi, J.C. Outeiro, C. Nouveau, B. Marcon, B. Zouhair

**CFD simulation and optimize of LN2 flow inside channels used for cryogenic machining: application to milling of titanium alloy Ti-6Al-4V**  
C. Tahri, P. Lequien, J.C. Outeiro, G. Poulachon

**Comparison between Dynamic and Non-Dynamic Cutting Tool Option in FEM Simulation for Producing Dimple structure**  
M. Dali, J. A. Ghani, C.H. Chen Haron, S. Hassan

**The Procedure of Solving the Inverse Problem for Determining Surface Heat Transfer Coefficient between Liquefied Nitrogen and Inconel 718 Workpiece in Cryogenic Machining**  
M. Hribersek, V. Sajn, F. Pusavec, J. Rech, J. Kopac