

# **6th Workshop on Fractional Differentiation and Its Applications 2013**

**Grenoble, France  
4-6 February 2013**

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## 6th Workshop on Fractional Differentiation and its Applications

### Technical Program for Monday February 4, 2013

<b>MoAMT2</b>	<b>MONT BLANC</b>
<b>Fractional Calculus: Modelling</b> (Regular Session)	
Chair: Sabatier, Jocelyn	Univ. Bordeaux1
11:00-11:20	MoAMT2.1
<i>Evolution of the Initial Box-Signal for Fractional Diffusion-Wave Equation: The Second Cauchy and Source Problems</i> , pp. 36-41.	
Povstenko, Yuriy	Jan Dlugosz Univ.
11:20-11:40	MoAMT2.2
<i>Computation of Flat Outputs for Fractional Systems : A Thermal Application</i> , pp. 42-47.	
Victor, Stephane	Univ. de Bordeaux, IMS
Melchior, Pierre	Univ. de Bordeaux, IMS
Oustaloup, Alain	Univ. de Bordeaux, IMS
11:40-12:00	MoAMT2.3
<i>Multi-Model Identification of a Fractional Non Linear System}</i> , pp. 48-53.	
Oukacine, Sadia	Univ. Mouloud Mammeri, Tizi-ouzou, Algeria
Djamah, Tounsia	Univ. Mouloud Mammeri, Tizi-ouzou, Algeria
Djennoune, Saïd	Univ. Mouloud Mammeri, Tizi-ouzou, Algeria
Mansouri, Rachid	Univ. Mouloud Mammeri, Tizi-ouzou, Algeria
Bettayeb, Maamar	Univ. of Sharjah
12:00-12:20	MoAMT2.4
<i>H Infinity State Feedback Control of Commensurate Fractional Order Systems</i> , pp. 54-59.	
Fadiga, Lamine	Univ. Bordeaux I, IMS
Sabatier, Jocelyn	Univ. Bordeaux I, IMS
Farges, Christophe	Univ. Bordeaux I, IMS
<b>MoPM1T2</b>	<b>MONT BLANC</b>
<b>Fractional Calculus: Mathematics</b> (Regular Session)	
Chair: Trujillo, Juan J	Univ. de La Laguna
Co-Chair: Le Mehaute, Alain	Kazan Federal Univ.
14:30-14:50	MoPM1T2.1
<i>Coa d'YI Fractional Differential 'CdYfUhcfg ; Yca YhfJWU' ; Yca YhfJWU' DV Ugy HFUbgjhc b UbX' F JYa Ub '7cb YWU' fy"</i> pp. 138-142.	
Le Mehaute, Alain	Kazan Federal Univ.
Tayurskii, Dmitrii	Kazan Federal Univ.
14:50-15:10	MoPM1T2.2
<i>Model Order Reduction on Krylov Subspaces for Fractional Linear Systems</i> , pp. 143-148.	
Garrappa, Roberto	Univ. of Bari
Maione, Guido	Pol. di Bari
15:10-15:30	MoPM1T2.3
<i>Regular Fractional Sturm-Liouville Problem with Generalized Derivatives of Order in (0, 1)</i> , pp. 149-154.	
Klimek, Malgorzata	Czestochowa Univ. of Tech.
Agrawal, Om Prakash	Southern Illinois Univ. at Carbondale
15:30-15:50	MoPM1T2.4
<i>Further Results on Finite Time Partial Stability of Fractional Order Time Delay Systems</i> , pp. 155-160.	

Lazarevic, Mihailo	Univ. of Belgrade, Faculty of Mechanical Engineering
15:50-16:10	MoPM1T2.5
<i>Time-Varying Initialization and Corrected Laplace Transform of the Caputo Derivative</i> , pp. 161-166.	
Lorenzo, Carl	NASA-Glenn Res. Center
Hartley, Tom T.	The Univ. of Akron
Adams, Jay Lawrence	The Univ. of Akron
16:10-16:30	MoPM1T2.6
<i>Stability of Discrete Fractional-Order Nonlinear Systems with the Nabla Caputo Difference</i> , pp. 167-171.	
Wyrwas, Malgorzata	Bialystok Univ. of Tech.
Girejko, Ewa	Bialystok Univ. of Tech.
Mozyrska, Dorota	Bialystok Univ. of Tech.
<b>MoPM2T2</b>	<b>MONT BLANC</b>
<b>Fractional Calculus: Engineering</b> (Regular Session)	
Chair: Oustaloup, Alain	Univ. Bordeaux 1 - IPB/ENSEIRB-MATMECA
Co-Chair: Ionescu, Clara	Ghent Univ.
18:00-18:20	MoPM2T2.1
<i>Fractional-Order Fourier Analysis of the DNA</i> , pp. 243-248.	
Machado, J.A. Tenreiro	Inst. of Engineering of Pol. of Porto
18:20-18:40	MoPM2T2.2
<i>Electrosorption Phenomena Taken into Account in a Fractional Model of Supercapacitor</i> , pp. 249-254.	
Nicolas, Bertrand	IMS Lab. - Bordeaux 1 Univ.
Sabatier, Jocelyn	IMS Lab. - Bordeaux 1 Univ.
Olivier, Briat	IMS Lab. - Bordeaux 1 Univ.
Jean-Michel, Vinassa	IMS Lab. - Bordeaux 1 Univ.
18:40-19:00	MoPM2T2.3
<i>Respiratory Impedance Model with Lumped Fractional Order Diffusion Compartment</i> , pp. 255-260.	
Ionescu, Clara	Ghent Univ.
Copot, Dana	Tech. Univ. of Iasi
De Keyser, Robin M.C.	Ghent Univ.
19:00-19:20	MoPM2T2.4
<i>H-Infinity Static Output Feedback Control for a Fractional-Order Glucose-Insulin System</i> , pp. 261-266.	
N'Doye, Ibrahim	CRAN, Nancy Univ.
Voos, Holger	Univ. of Applied Sciences Ravensburg-Weingarten
Darouach, Mohamed	Univ. Henri Poincare-Nancy
Schneider, Jochen G.	Univ. of Luxembourg
Knauf, Nicolas	Centre Hospitalier du Nord, Ettelbruck
19:20-19:40	MoPM2T2.5
<i>Comparison of Two LPV Fractional Models Used for Ultracapacitor Identification</i> , pp. 267-272.	
Kanoun, Houcem	Univ. de Poitiers
Gabano, Jean-Denis	Univ. de Poitiers
Pointot, Thierry	Univ. de Poitiers

Technical Program for Tuesday February 5, 2013

TuAMT2		MONT BLANC	
<b>Fractional Calculus: Systems and Control 1 (Regular Session)</b>			
Chair: Lanusse, Patrick		Univ. de Bordeaux - IPB	
08:30-08:50		TuAMT2.1	
<i>New Optimization Criteria for the Simplification of the Design of Third Generation CRONE Controllers</i> , pp. 350-355.			
Lanusse, Patrick		Univ. de Bordeaux 1	
Lopes, Mariely		Valéol S.A.S.	
Sabatier, Jocelyn		Univ. de Bordeaux 1	
Feytout, Benjamin		Valeol S.A.S.	
08:50-09:10		TuAMT2.2	
<i>Non-Fragile Tuning of Fractional-Order PD Controllers for IPD-Modelled Processes</i> , pp. 356-361.			
Bahavarnia, MirSaleh		Sharif Univ. of Tech.	
Tavazoei, Mohammad Saleh		Sharif Univ. of Tech.	
Mesbahi, Afshin		Sharif Univ. of Tech.	
09:10-09:30		TuAMT2.3	
<i>An Identification Procedure for the Tuning of a Robust Fractional Controller</i> , pp. 362-367.			
Tenoutit, Mamar		Univ. of Poitiers, LAII	
Maamri, Nezha		Ec. supérieure d'ingénieurs de Poitiers	
Trigeassou, Jean-Claude		Univ. of Bordeaux, IMS-LAPS	
09:30-09:50		TuAMT2.4	
<i>Comparison of the Robustness Performance of Two Fractional-Order PI Controllers for Irrigation Canals</i> , pp. 368-373.			
Feliu, Vicente		Univ. of Castilla-La Mancha	
Maione, Guido		Pol. di Bari	
Calderón Valdez, Shlomi		Univ. of Castilla-La Mancha	
Nereida			
09:50-10:10		TuAMT2.5	
<i>Fractionalization: A New Tool for Robust Adaptive Control of Noisy Plants</i> , pp. 374-379.			
Ladaci, Samir		Univ. of Skikda	
Bensafia, Yassine		Univ. of Skikda	
10:10-10:30		TuAMT2.6	
<i>Fractional PID Controller Tuned by Genetic Algorithms for a Three DOF's Robot System Driven by DC Motors</i> , pp. 380-385.			
Lazarević, Mihailo		Univ. of Belgrade	
Batalov, Srecko		Ivdam process control, Belgrade	
Latinovic, Tihomir		Univ. in Banja Luka	
TuPM1T2		MONT BLANC	
<b>Fractional Calculus: Systems and Control 2 (Regular Session)</b>			
Chair: Melchior, Pierre		Univ. Bordeaux 1 - IPB/ENSEIRB-MATMECA	
Co-Chair: Trigeassou, Jean-Claude		ESIP	
13:30-13:50		TuPM1T2.1	
<i>Sliding Mode Control for Uncertain Input Delay Fractional Order Systems</i> , pp. 457-462.			
SI Ammour, Amar		Univ. of Mouloud Mammeri, Tizi-Ouzou	
Djennoune, Saïd		Univ. of Mouloud Mammeri, Tizi-Ouzou	
Ghanes, Malek		ENSEA	
Barbot, Jean Pierre		ENSEA	

Bettayeb, Maamar		Univ. of Sharjah	
13:50-14:10		TuPM1T2.2	
<i>Robust Cruise Control Using CRONE Approach</i> , pp. 463-468.			
Morand, Audrey		Univ. Bordeaux 1 - PSA Peugeot Citroën	
Moreau, Xavier		Univ. Bordeaux 1, IMS	
Melchior, Pierre		Univ. Bordeaux 1, IMS	
Moze, Mathieu		PSA Peugeot Citroën	
14:10-14:30		TuPM1T2.3	
<i>Chaotic Synchronization of Fractional Piecewise Linear System by Fractional Order SMC</i> , pp. 469-474.			
Wu, Wenjuan		Nanjing Forestry Univ.	
Chen, Ning		Nanjing Forestry Univ.	
Chen, Nan		Southeast Univ.	
14:30-14:50		TuPM1T2.4	
<i>The Effect of Fractional Order on Oscillatory Behavior of Scalar Fractional Delay Systems of Neutral Type</i> , pp. 475-480.			
Mesbahi, Afshin		Sharif Univ. of Tech.	
Haeri, Mohammad		Sharif Univ. of Tech.	
14:50-15:10		TuPM1T2.5	
<i>Path Tracking Design Based on I/O Davidson-Cole Transfer Function for Square MIMO Systems</i> , pp. 481-486.			
Melchior, Pierre		Univ. Bordeaux 1 - IPB/ENSEIRB-MATMECA	
Yousfi, Najah		Univ. of Sfax	
Inarn, Chayapol		Univ. Bordeaux 1 - IPB/ENSEIRB-MATMECA	
Derbel, Nabil		Univ. of Sfax	
Oustaloup, Alain		Univ. Bordeaux 1 - IPB/ENSEIRB-MATMECA	
15:10-15:30		TuPM1T2.6	
<i>Parameter and Order Estimation from Noisy Step Response Data</i> , pp. 487-492.			
Tavakoli-Kakhki, Mahsan		Shahid Rajae Teacher Training Univ.	
Tavazoei, Mohammad Saleh		Sharif Univ. of Tech.	
Mesbahi, Afshin		Sharif Univ. of Tech.	
TuPM2T2		MONT BLANC	
<b>Fractional Calculus: Physics and Systems Analysis (Regular Session)</b>			
Chair: Malti, Rachid		Univ. de Bordeaux	
Co-Chair: Baleanu, Dumitru		Cankaya Univ. Faculty of Arts and Sciences	
17:00-17:20		TuPM2T2.1	
<i>Which <math>L_p</math>-Norm for Evaluating Fractional System Performances?</i> , pp. 571-575.			
Malti, Rachid		Univ. de Bordeaux	
17:20-17:40		TuPM2T2.2	
<i>Application of the Prony's Method to Analysis of the FTIR Data</i> , pp. 576-581.			
Baleanu, Dumitru		Cankaya Univ. Faculty of Arts and Sciences	
Nigmatullin, Raoul		Kazan Federal Univ.	
Suleyman, Ozcellik		Gazi Univ.	
Cetin, Sebnem		Physics Department, Gazi Univ. Ankara, Turkey	
17:40-18:00		TuPM2T2.3	
<i>The Caputo Derivative and the Infinite State Approach</i> , pp. 582-587.			

Trigeassou, Jean-Claude	IMS-LAPS, Univ. of Bordeaux I
Maamri, Nezha	LIAS, Univ. of Poitiers
Oustaloup, Alain	IMS-LAPS, Univ. of Bordeaux I
18:00-18:20	TuPM2T2.4
<i>Displacements of Randomly Arrested Lévy Motions</i> , pp. 588-593.	
Neel, Marie-Christine	Univ. of Avignon
18:20-18:40	TuPM2T2.5
<i>Wave Propagation in Fractional Nonlocal Elastic Continua</i> , pp. 594-599.	
Sapora, Alberto	Pol. di Torino
Cornetti, Pietro	Pol. di Torino
Carpinteri, Alberto	Pol. di Torino

### Technical Program for Wednesday February 6, 2013

<b>WeAMT2</b>	MONT BLANC
<b>Fractional Calculus: Algorithms</b> (Regular Session)	
Chair: Ortigueira, Manuel	UNINOVA and Faculdade de Ciências eTecnologiadaUniversidade Nova de Lisboa
Co-Chair: Ostalczyk, Piotr	Lodz Univ. of Tech. Inst. of AppliedComputer Science
08:30-08:50	WeAMT2.1
<i>A New Look into the Discrete-Time Fractional Calculus: Derivatives and Exponentials</i> , pp. 624-629.	
Ortigueira, Manuel	Univ. Nova de Lisboa
Coito, Fernando José	Univ. Nova de Lisboa
Trujillo, Juan J	Univ. de La Laguna
08:50-09:10	WeAMT2.2
<i>A New Look into the Discrete-Time Fractional Calculus: Transform and Linear Systems</i> , pp. 630-635.	
Ortigueira, Manuel	Univ. Nova de Lisboa
Coito, Fernando José	Univ. Nova de Lisboa
Trujillo, Juan J	Univ. de La Laguna
09:10-09:30	WeAMT2.3
<i>Pseudo-Recursive Trapezoidal Rule for the Numerical Solution of Linear Fractional Differential Equations</i> , pp. 636-641.	
Pisano, Alessandro	Univ. di Cagliari
Garrappa, Roberto	Univ. of Bari
Nessi, Davide	Univ. of Cagliari
Rapaic, Milan R.	Univ. of NoviSad
09:30-09:50	WeAMT2.4
<i>Likewise - Radar Fractional-Order Edge Detector</i> , pp. 642-647.	
Duch, Piotr	Lodz Univ. ofTechnology
Błaszczak, Sylwester	Lodz Univ. of Tech.
Laski, Maciej	Lodz Univ. of Tech.
Krzyszewski, Roman	Lodz Univ. of Tech.
Ostalczyk, Piotr	Lodz Univ. of Tech.
09:50-10:10	WeAMT2.5
<i>Fractional Order Differentiation by Integration: An Application to Fractional Linear Systems</i> , pp. 648-653.	
Liu, Da-Yan	King Abdullah Univ. of Science and Tech.
Laleg, Taous-Meriem	King Abdullah Univ. of Science and Tech.
Gibaru, Olivier	ARTS ET METIERS ParisTech

<b>WePM2T2</b>	MONT BLANC
<b>Advances in Fractional Order Estimation and Control</b> (Invited Session)	
Chair: Pisano, Alessandro	Univ. di Cagliari
Co-Chair: Maione, Guido	Pol. di Bari
15:00-15:20	WePM2T2.1
<i>Adaptive Order and Parameter Estimation in Fractional Linear Systems by Approximate Gradient and Least Squares Methods (I)</i> , pp. 876-881.	
Rapaic, Milan R.	Univ. of NoviSad
Pisano, Alessandro	Univ. di Cagliari
15:20-15:40	WePM2T2.2
<i>Nonlinear Discrete-Time Algorithm for Fractional Derivatives Computation with Application to <math>PI^{\lambda}D^{\mu}</math> Controller Implementation (I)</i> , pp. 882-887.	
Pisano, Alessandro	Univ. of Cagliari
Nessi, Davide	Univ. of Cagliari
Rapaic, Milan R.	Univ. of NoviSad
Usai, Elio	Univ. of Cagliari
15:40-16:00	WePM2T2.3
<i>Observability and Controllability of Fractional Linear Dynamical Systems (I)</i> , pp. 888-893.	
Balachandran, K	Bharathiar Univ.
Govindaraj, V.	Bharathiar Univ.
Ortigueira, Manuel	Univ. Nova de Lisboa
Rivero, Margarita	Univ. de La Laguna
Trujillo, Juan J	Univ. de La Laguna
16:00-16:20	WePM2T2.4
<i>Laboratory Experiments on Fractional Order PI Control of a Servo System with Delay (I)</i> , pp. 894-899.	
Lino, Paolo	Pol. di Bari
Maione, Guido	Pol. di Bari
16:20-16:40	WePM2T2.5
<i>A Comparison between Robust and Parameterized Controllers for Fractional Order Modeled Ionic Polymeric Metal Composite Actuator (I)</i> , pp. 900-905.	
Caponetto, Riccardo	Univ. of Catania
Graziani, Salvatore	Univ. of Catania
Pappalardo, Fulvio Livio	Univ. of Catania
Xibilia, M. Gabriella	Univ. degli Studi di Messina
16:40-17:00	WePM2T2.6
<i>Optimal Set-Point Regulation of Fractional Systems (I)</i> , pp. 906-911.	
Padula, Fabrizio	Univ. of Brescia
Visioli, Antonio	Univ. of Brescia