

2010 First Workshop on Hardware and Software Implementation and Control of Distributed MEMS

(DMEMS 2010)

**Besançon, France
28 – 29 June 2010**



IEEE Catalog Number: CFP1002K-PRT
ISBN: 978-1-4244-7222-2

2010 First Workshop on Hardware and Software Implementation and Control of Distributed MEMS

dMEMS 2010

Table of Contents

Preface from the Chairs.....	vii
Committees and Reviewers.....	viii

Invited Talks

System Configuration and Fabrication Technology for Distributed MEMS	1
<i>Hiroyuki Fujita and Manabu Ataka</i>	

Regular Papers

2D Planar Micro Manipulator by Stack-Integrated Micro Actuator/Sensor Array	6
<i>Manabu Ataka, Hiroyuki Fujita, and Makoto Mita</i>	
A New Two-Dimensional Actuator for Air Flow Micro-manipulation	11
<i>Réda Yahiaoui, Rabah Zeggari, Julien Malapert, and Jean-François Manceau</i>	
Modal Control of Mechanically Coupled NEMS Array for Tunable Oscillators	16
<i>Eric Colinet and Chady Kharrat</i>	
Spintorque Oscillator Characteristics in Coupled Networks	20
<i>M. Zarudniev, E. Colinet, P. Villard, U. Ebels, and G. Scorletti</i>	
A Novel Modelling Methodology for MEMS with IC Applied to a DLP Mirror Array	24
<i>Gunar Lorenz, Stephane Rouvillois, Jean-Francois Chianetta, and Gerold Schröpfer</i>	
Experimental Characterization of Acoustic Impedance Control Using 2D Network of Distributed Smart Cells	32
<i>P. David, M. Collet, and J.-M. Cote</i>	
Distributed Piezoelectric Guided T-Wave Generator, Design and Analysis	38
<i>O. Bareille, M. Kharrat, W. Zhou, and M. N. Ichchou</i>	
A Model of Two-Dimensional Array of Cantilevers and Its Validation	43
<i>M. Lenczner, S. Su, and H. Hui</i>	

FPGA Implementation of Diffusive Realization for a Distributed Control Operator	50
<i>G. Goavec-Merou, Y. Yakoubi, R. Couturier, M. Lenczner, J. M. Friedt, and F. Wang</i>	
A Multiscale Model of Cantilever Arrays with a Semi-decentralized Approximation of an Optimal Control	56
<i>H. Hui, Y. Yakoubi, M. Lenczner, and N. Ratier</i>	
Analog Computing of Control Laws by Periodic Network of Resistances	64
<i>Nicolas Ratier</i>	
A Load-Balanced Routing Scheme for NoC-Based Systems-on-Chip	72
<i>Mahdi Asefi Yazdi, Mehdi Modarressi, and Hamid Sarbazi-Azad</i>	
Distributed Discrete State Acquisition and Concurrent Pattern Recognition in a MEMS-Based Smart Surface#	78
<i>Didier El Baz, Vincent Boyer, Julien Bourgeois, Eugen Dedu, and Kahina Boutoustous</i>	
Application Specific Router Architectures for NoCs: An Efficiency and Power Consumption Analysis	86
<i>Noushin Najjari and Hamid Sarbazi-Azad</i>	
FPGA-in-the-Loop for Control Emulation of Distributed MEMS Simulation Using VHDL-AMS	92
<i>Y.-A. Chapuis, L. Zhou, D. Casner, H. Ai, and Y. Hervé</i>	
Using SysML for Smart Surface Modeling	100
<i>Alain Giorgetti, Ahmed Hammad, and Bruno Tatibouët</i>	
Author Index	109