

2015 International Workshop on Recent Advances in Sliding Modes

(RASM 2015)

**Istanbul, Turkey
9-11 April 2015**



**IEEE Catalog Number: CFP15RAR-POD
ISBN: 978-1-4799-8948-5**

TABLE OF CONTENTS

SYNERGIES BETWEEN THE DYNAMICS OF THE IMMUNE RESPONSE OF T CELLS AND THE VARIABLE STRUCTURE CONTROL PARADIGM	1
<i>A. J. N. Anelone, Y. Orlov, S. K. Spurgeon</i>	
ESTIMATION OF SIDE SLIP AND ROAD BANK ANGLE USING HIGH-GAIN OBSERVER AND HIGHER-ORDER SLIDING MODE OBSERVER	7
<i>K. C. Veluvolu, J. J. Rath, M. Defoort, Y. C. Soh</i>	
AN AUGMENTED PID CONTROL SCHEME FOR ROBUST CONTROL	13
<i>M. O. Efe</i>	
SLIDING-MODE OBSERVER BASED SENSOR-LESS CONTROL OF A SMALL WIND ENERGY CONVERSION SYSTEM	18
<i>J. S. L. Senanayaka, H. R. Karimi, K. G. Robbersmyr</i>	
SLIDING MODE CONTROLBASED LIMIT CYCLE OSCILLATION SUPPRESSION FOR UAVS USING SYNTHETIC JET ACTUATORS	24
<i>N. Ramos-Pedroza, W. MacKunis, M. Reyhanoglu</i>	
A NOVEL SLIDING MODE CONTROL METHOD FOR AN INERTIA WHEEL PENDULUM SYSTEM	29
<i>N. Sun, Y. Fang, H. Chen</i>	
OPTIMAL DISCRETE-TIME INTEGRAL SLIDING MANIFOLD DESIGN FOR LINEAR SYSTEMS SUBJECTED TO A CLASS OF UNMATCHED DISTURBANCES	35
<i>B. Veselic, B. Drazenovic, C. Milosavljevic</i>	
SLIDING MODE WITH TIME DELAY CONTROL FOR MIMO NONLINEAR SYSTEMS WITH UNKNOWN DYNAMICS	41
<i>Y. Kali, M. Saad, K. Benjelloun, M. Benbrahim</i>	
SUPER-TWISTING OBSERVER DESIGN FOR SYSTEMS OF DIMENSION MORE THAN ONE	47
<i>M. Basin, P. Rodriguez-Ramirez</i>	
HYPERBOLIC TANGENT BASED SWITCHING REACHING LAW FOR DISCRETE TIME SLIDING MODE CONTROL OF DYNAMICAL SYSTEMS	53
<i>P. Lesniewski, A. Bartoszewicz</i>	
IBVS WITH FUZZY SLIDING MODE FOR ROBOT MANIPULATORS	59
<i>T. Yuksel</i>	
A NONHOMOGENEOUS FINITE-TIME CONVERGENT SUPER-TWISTING ALGORITHM	65
<i>M. Basin, P. Rodriguez-Ramirez, S. Ding, S. Dominic</i>	
INTELLIGENT TWISTING SLIDING MODE CONTROLLER USING NEURAL NETWORK FOR PNEUMATIC ARTIFICIAL MUSCLES ROBOT ARM	71
<i>S. Boudoua, M. Hamerlain, F. Hamerlain</i>	
A FINITE-TIME-CONVERGENT FAULT-TOLERANT CONTROL AND ITS EXPERIMENTAL VERIFICATION FOR DTS200 THREE-TANK SYSTEM	77
<i>M. Basin, L. Li, M. Krueger, S. X. Ding</i>	
DISCRETE-TIME INTEGRAL TERMINAL SLIDING MODE CONTROL OF A PRECISION MICRO-MOTION SYSTEM	83
<i>Q. Xu</i>	
OUTPUT FEEDBACK DISCRETE- TIME NETWORKED SLIDING MODE CONTROL	89
<i>D. H. Shah, A. J. Mehta</i>	
AN IMPROVED LEARNING VARIABLE STRUCTURE CONTROL METHOD FOR MULTI-PERIODIC DISTURBANCES REJECTION	96
<i>F. Li, P. Ye, H. Zhang</i>	
CONTINUITY AND ORDER OF CONTINUITY IN DISCRETE-TIME HIGHER ORDER SLIDING MODE	100
<i>N. K. Sharma, S. Singh, S. Janardhanan</i>	
PRELIMIT IMPLEMENTATION OF STATES AND DISTURBANCES OBSERVER ON SLIDING MODES	106
<i>S. A. Krasnova, V. A. Utkin</i>	
SLIDING MODE CONTROL OF RIJKE-TYPE THERMOACOUSTIC SYSTEMS	112
<i>J. R. Hervas, M. Reyhanoglu, W. MacKunis</i>	
STOCHASTIC VARIABLE STRUCTURE CONTROL OF DISCRETE TIME LTI SYSTEMS WITH BOUNDED DISTURBANCES	118
<i>S. Singh, S. Janardhanan</i>	

DESIGN OF A GAIN MATRIX FOR A SLIDING MODE OBSERVER FOR AN ARTIFICIAL GAS LIFT SYSTEM	124
<i>M. L. Hammadih, K. A. Hosani, I. Boiko</i>	
ENSURING OF INVARIANCE OF THE OUTPUT VARIABLES OF LINEAR SYSTEMS TO EXTERNAL UNMATCHED DISTURBANCES UNDER RESTRICTIONS ON THE STATE VARIABLES AND CONTROLS	130
<i>V. A. Utkin, S. A. Krasnova, S. A. Kochetkov, A. V. Utkin</i>	
SENSOR FAULT DIAGNOSIS IN WATER-STEAM POWER PLANT: A COMBINED OBSERVER-BASED/PATTERN-RECOGNITION APPROACH	136
<i>G. Fadda, A. Pilloni, A. Pisano, E. Usai, A. Marjanovic, S. Vujnovic</i>	
SLIDING-MODE BOUNDARY CONTROL OF A CLASS OF PERTURBED REACTION-DIFFUSION PROCESSES	143
<i>A. Baccoli, Y. Orlov, A. Pisano, E. Usai</i>	
STABILIZATION OF PVTOL AIRCRAFT BY SUPERTWISTING ALGORITHMS	149
<i>A. Popov, B. Andrievsky, I. Zaitceva</i>	
MULTIVARIABLE CONTINUOUS INTEGRAL SLIDING MODE CONTROL	155
<i>S. Kamal, A. Chalanga, R. Kumar, B. Bandyopadhyay</i>	
THE NEW SECOND ORDER SLIDING MODE ALGORITHM AND CONVERGENCE PROOF	160
<i>S. Kochetkov, S. Krasnova, Y. Rassadin, V. Utkin</i>	
EVENT BASED SLIDING MODE CONTROL WITH QUANTIZED MEASUREMENT	167
<i>A. K. Behera, B. Bandyopadhyay</i>	
TIME-VARYING SLIDING MODE IN RIGID BODY MOTION CONTROLLED BY MAGNETIC TORQUE	173
<i>A. Sofyah, E. M. Jafarov, R. Wisniewski</i>	
SLIDING MODE OBSERVER OF SUBMODULAR CAPACITOR VOLTAGES IN MODULAR MULTILEVEL CONVERTER	179
<i>A. Al-Wedami, K. Al-Hosani, A. R. Beig</i>	
ROBUST DESIGN OF FRACTIONAL ORDER PID SLIDING MODE BASED POWER SYSTEM STABILIZER IN A POWER SYSTEM VIA A NEW METAHEURISTIC BAT ALGORITHM	185
<i>C. Abdelghani, C. Lakhdar, A. Salem, B. M. Djameledine, M. Lakhdar</i>	
ADAPTIVE CHATTERING-FREE SLIDING MODE CONTROL DESIGN USING FUZZY MODEL OF THE SYSTEM AND ESTIMATED UNCERTAINTIES AND ITS APPLICATION TO ROBOT MANIPULATORS	190
<i>M. Zeinali</i>	
A NEW SLIDING MODE CONTROLLER FOR ELECTRO-HYDRAULIC ACTUATOR (EHA) APPLICATIONS	196
<i>X. Hu, D. Al-Ani, S. Habibi</i>	
USING POLYNOMIAL FUNCTIONS FOR A TIME VARYING SLIDING SURFACE WITH ANGULAR INFORMATION	203
<i>S. Tokat, O. Eray</i>	
HIGHER ORDER SLIDING MODE CONTROL APPLICATIONS WITH OUTPUT REDEFINITION FOR NONMINIMUM PHASE MISSILE SYSTEM	209
<i>Y. Parah, E. M. Jafarov</i>	
DISCRETIZATION BEHAVIORS OF A SUPER-TWISTING ALGORITHM BASED SLIDING MODE CONTROL SYSTEM	217
<i>Y. Yan, X. Yu, C. Sun</i>	
PMSM SENSORLESS CONTROL BASED ON SLIDING MODE OBSERVERS METHODOLOGY FOR NONLINEAR SYSTEMS WITH MODEL IMPRECISION	222
<i>V. C. Ilioudis</i>	
Author Index	