

1st IFAC Workshop on Linear Parameter Varying Systems (LPVS 2015)

IFAC PapersOnline Volume 48, Issue 26

Grenoble, France
7 – 9 October 2015

Editors:

**Mirko Fiacchini
Marco Lovera
Olivier Sename**

**Luc Dugard
Nicholas Karcantias**

ISBN: 978-1-5108-1935-1

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2015) by Elsevier Limited
All rights reserved.

Printed by Curran Associates, Inc. (2016)

For permission requests, please contact the publisher, Elsevier Limited
at the address below.

Elsevier Limited
360 Park Ave South
New York, NY 10010

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

THE DISTURBANCE DECOUPLING PROBLEM WITH QUADRATIC STABILITY FOR LPV SYSTEMS	1
<i>G. Conte, A. M. Perdon, E. Zattoni</i>	
NUMERICAL COMPUTATION OF LYAPUNOV FUNCTION FOR HYPERBOLIC PDE USING LMI FORMULATION AND POLYTOPIC EMBEDDINGS	7
<i>Pierre-Olivier Lamare, Antoine Girard, Christophe Prieur</i>	
TOWARD NONLINEAR TRACKING AND REJECTION USING LPV CONTROL	13
<i>Gérard Scorletti, Vincent Fromion, Safia De Hillerin</i>	
SAMPLED-DATA LPV CONTROL: A LOOPED FUNCTIONAL APPROACH	19
<i>J. M. Gomes Da Silva Jr., V. M. Moraes, J. V. Flores, A. H. K. Palmeira</i>	
SHIFTING LINEAR QUADRATIC CONTROL OF CONSTRAINED CONTINUOUS-TIME DESCRIPTOR LPV SYSTEMS	25
<i>Damiano Rotondo, Fatiha Nejari, Vicenç Puig</i>	
GAIN-SCHEDULED STATE FEEDBACK CONTROLLERS FOR DISCRETE-TIME LPV SYSTEMS USING SCHEDULING PARAMETERS AFFECTED BY ABSOLUTE AND PROPORTIONAL UNCERTAINTIES	31
<i>Masayuki Sato</i>	
IDENTIFICATION OF A LINEAR PARAMETER VARYING DRIVER MODEL FOR THE DETECTION OF DISTRACTION	37
<i>Ablamvi Ameyoe, Philippe Chevrel, Eric Le-Carpentier, Franck Mars, Hervé Illy</i>	
SIMPLE DISCRETE-TIME SWITCHED H_∞ OPTIMAL CONTROL: APPLICATION FOR LATERAL VEHICLE CONTROL	43
<i>L. Menhour, D. Koenig, B. D'Andréa-Novel</i>	
RECONFIGURABLE FAULT-TOLERANT CONTROL OF IN-WHEEL ELECTRIC VEHICLES WITH STEERING SYSTEM FAILURE	49
<i>András Mihály, Péter Gáspár</i>	
FORCE CONTROL SYSTEM FOR AN AUTOMOTIVE SEMI-ACTIVE SUSPENSION	55
<i>Carlos A. Vivas-Lopez, Diana Hernández-Alcántara, Manh-Quan Nguyen, Ruben Morales-Menendez, Olivier Sename</i>	
LPV-BASED VARIABLE-GEOMETRY SUSPENSION CONTROL CONSIDERING NONLINEAR TYRE CHARACTERISTICS	61
<i>Balázs Németh, Péter Gáspár</i>	
SEMI-ACTIVE SUSPENSION CONTROL WITH LPV MASS ADAPTATION	67
<i>Juan C. Tudón-Martínez, Diana Hernández-Alcántara, Ruben Morales-Menendez</i>	
TRANSMITTED TORQUE OBSERVER APPLIED TO REAL TIME ENGINE AND CLUTCH TORQUE ESTIMATION	73
<i>Rémi Losero, Jimmy Lauber, Thierry-Marie Guerra</i>	
GRAY-BOX LPV MODEL IDENTIFICATION OF A 2-DOF SURGICAL ROBOTIC MANIPULATOR BY USING AN H_∞-NORM-BASED LOCAL APPROACH	79
<i>Daniel Vizer, Guillaume Mercère, Edouard Laroche</i>	
A KERNEL-BASED APPROACH TO MIMO LPV STATE-SPACE IDENTIFICATION AND APPLICATION TO A NONLINEAR PROCESS SYSTEM	85
<i>Syed Z. Rizvi, Javad Mohammadpour, Roland Tóth, Nader Meskin</i>	
ESTIMATION OF LPV-SS MODELS WITH STATIC DEPENDENCY USING CORRELATION ANALYSIS	91
<i>Pepijn B. Cox, Roland Tóth, Mihály Petreczky</i>	
A KERNEL BASED APPROACH FOR LPV SUBSPACE IDENTIFICATION	97
<i>I. Proimadis, H. J. Bijl, J. W. Van Wingerden</i>	
LINEAR PARAMETER VARYING TECHNIQUES APPLIED TO AEROSERVOELASTIC AIRCRAFT: IN MEMORY OF GARY BALAS	103
<i>Harald Pfiffer, Claudia P. Moreno, Julian Theis, Aditya Kotikapudi, Abhineet Gupta, Bela Takarics, Peter Seiler</i>	
ROTORCRAFT VIBRATION CONTROL: ADAPTIVE VS LPV METHODS	109
<i>Roberto Mura, Marco Lovera</i>	
LPV MODELING AND LFT UNCERTAINTY IDENTIFICATION FOR ROBUST ANALYSIS: APPLICATION TO THE VEGA LAUNCHER DURING ATMOSPHERIC PHASE	115
<i>Andres Marcos, Samir Bennani, Christophe Roux, Monica Valli</i>	

LPV MODEL IDENTIFICATION FOR FLUTTER PREDICTION: A COMPARISON OF METHODS	121
<i>M. Visser, S. T. Navalkar, J. W. Van Wingerden</i>	
LPV CONTROL FOR MULTI-HARMONIC MICROVIBRATION ATTENUATION: APPLICATION TO HIGH STABILITY SPACE MISSIONS	127
<i>Valentin Preda, Jerome Cieslak, David Henry, Samir Bennani, Alexandre Falcoz</i>	
PARAMETRIC REDUCED ORDER DYNAMICAL MODEL CONSTRUCTION OF A FLUID FLOW CONTROL PROBLEM	133
<i>C. Poussot-Vassal, D. Sipp</i>	
LPVTOOLS: A TOOLBOX FOR MODELING, ANALYSIS, AND SYNTHESIS OF PARAMETER VARYING CONTROL SYSTEMS	139
<i>Arnar Hjartarson, Peter Seiler, Andrew Packard</i>	
NONPARAMETRIC LPV DATA-DRIVEN CONTROL	146
<i>Simone Formentin, Dario Piga, Roland Tóth, Sergio M. Savaresi</i>	
GENERALIZED DYNAMIC OBSERVERS FOR LPV SINGULAR SYSTEMS	152
<i>G.-L. Osorio-Gordillo, M. Darouach, L. Boutat-Baddas, C.-M. Astorga-Zaragoza</i>	
A NETWORKED-BASED MPC ARCHITECTURE FOR CONSTRAINED LPV SYSTEMS	158
<i>Alessandro Casavola, Walter Lucia, Francesco Tedesco</i>	
QUADRATIC DESIGN OF D-STABILIZING NON-PDC CONTROLLERS FOR QUASI-LPV/T-S MODELS	164
<i>Abdelmadjid Cherifi, Kevin Guelton, Laurent Arcese</i>	
NULL-SPACE COMPUTATION FOR QLPV SYSTEMS	170
<i>Z. Szabó, T. Péni, J. Bokor</i>	
ROBUST SENSOR FAULT DETECTION AND ISOLATION OF AN ANERAROBIC BIOREACTOR MODELED AS A DESCRIPTOR-LPV SYSTEM	176
<i>F. R. López-Estrada, J. H. Castañon González, J. C. Ponsart, D. Theilliol, C. M. Astorga-Zaragoza</i>	
MINIMAL RPI SETS COMPUTATION FOR POLYTOPIC SYSTEMS USING THE BOUNDED-REAL LEMMA AND A NEW SHRINKING PROCEDURE	182
<i>John J. Martínez</i>	
FAULT DETECTION FOR LPV SYSTEMS: LOOP SHAPING H_{∞} APPROACH	188
<i>Ahmad Farhat, Damien Koenig, Olivier Sename</i>	
A SWITCHED LPV OBSERVER FOR ACTUATOR FAULT ESTIMATION	194
<i>M. Q. Nguyen, O. Sename, L. Dugard</i>	
LINEAR PARAMETER-VARYING CONTROL OF A COPOLYMERIZATION REACTOR	200
<i>Hossam S. Abbas, Sandy Rahme, Nader Meskin, Christian Hoffmann, Roland Tóth, Javad Mohammadpour</i>	
ITERATIVE FEEDBACK TUNING OF AN LPV FEEDFORWARD CONTROLLER FOR WIND TURBINE LOAD ALLEVIATION	207
<i>Sachin T. Navalkar, Jan-Willem Van Wingerden</i>	
AN H_{∞} LPV CONTROL FOR A CLASS OF LPV SYSTEMS USING A DESCRIPTOR APPROACH: APPLICATION TO A WIND TURBINE MODE	213
<i>Harouna Souley Ali, Mohamed Darouach, Michel Zasadzinski, Marouane Alma</i>	
DECENTRALIZED ROBUST CONTROL OF POWER GRIDS USING LPV-MODELS OF DAE-SYSTEMS	218
<i>Konstantin Schaab, Olaf Stursberg</i>	
SWITCHING ROBUST CONTROLLERS FOR AUTOMATIC REGULATION OF POSTOPERATIVE HYPERTENSION USING VASODILATOR DRUG INFUSION RATE	224
<i>Saeed Ahmed, Hitay Özbay</i>	
FIXED-ORDER LINEAR PARAMETER VARYING CONTROLLER DESIGN FOR A 2DOF GYROSCOPE	230
<i>Zlatko Emedi, Alireza Karimi</i>	
DESIGN AND EXPERIMENTAL TESTS OF AN LPV POWER SYSTEM STABILIZER ON A 10KVA SMALL-SCALE GENERATING UNIT	236
<i>Fabricao G. Nogueira, Walter Barra Jr., Carlos T. Da Costa Jr., José A. L. Barreiros, Jânio José De Lana</i>	
Author Index	