

Jorge M. Gonçalves

CONTACT INFORMATION	Luxembourg Centre for Systems Biomedicine University of Luxembourg 6, avenue du Swing L-4367 Belvaux, Luxembourg <i>Voice:</i> +352 466644 6519 <i>E-mail:</i> jmg@uni.lu	Department of Engineering University of Cambridge Trumpington Street Cambridge CB2 1PZ, UK +44 1223 332770 jmg77@cam.ac.uk
ACADEMIC EXPERIENCE	University of Luxembourg , Luxembourg <i>Professor</i> , Luxembourg Centre for Systems Biomedicine <i>Visiting Professor</i> , Luxembourg Centre for Systems Biomedicine University of Cambridge , Cambridge, UK <i>Principal Research Associate</i> , Department of Plant Sciences <i>Principal Research Associate</i> , Department of Engineering <i>Reader</i> , Department of Engineering <i>University Lecturer</i> , Department of Engineering <i>Pembroke College Fellow</i> California Institute of Technology , Pasadena, CA, USA <i>Visiting Professor</i> , Control and Dynamical Systems <i>Postdoctoral Scholar</i> , Control and Dynamical Systems Massachusetts Institute of Technology , Cambridge, MA, USA <i>Postdoctoral Fellow</i> , Dept of Electrical Engineering and Computer Science <i>Research Assistant</i>	September 2013–present June–December 2010 September 2019–present November 2014–September 2019 October 2012–November 2014 April 2004–September 2012 October 2005–November 2014 January–October 2011 April 2001–March 2004 Fall 2000–Spring 2001 Fall 1993–Summer 2000
EDUCATION	Massachusetts Institute of Technology , Cambridge, MA USA <i>Doctor of Philosophy</i> in Electrical Engineering and Computer Science Dissertation Title: “Constructive Global Analysis of Hybrid Systems”. Advisors: Professors Alexandre Megretski and Munther Dahleh. <i>Master of Science</i> in Electrical Engineering and Computer Science Dissertation Title: “Robust Stability of a Class of Nonlinear Systems”. Advisor: Professor Munther Dahleh. University of Porto , Faculty of Engineering, Porto, Portugal <i>Licenciatura</i> (5-year S.B.) in Electrical Engineering and Computer Science Senior design project: “Optimal Control: Applications and Algorithms”. Supervisor: Professor Fernando Lobo Pereira.	September 2000 June 1995 August 1993
GRANTS AND AWARDS	PI. <i>FNR COVID-19 Fast-Track</i> , “Short, mid-term and exit strategies predictions of the Covid-19 epidemic in Luxembourg”, ref PREVID 14863306. PI. <i>FNR OPEN</i> , “Synchronization of biological networks”, ref SYBION O19/13904037. Co-Investigator. <i>FNR CORE Junior</i> , “Dynamics modelling from single-cell data”, ref DynCell C19/BM/13684479.	€50,000 May 2020–October 2020 €322,000 Sept 2020–Aug 2023 €439,000 Dec 2019–Nov 2021

111 Foreign Outstanding Talent at Huazhong University of Science and Technology	2018–2023
PI. <i>University of Luxembourg IRP</i> , “Optimisation problems with generalised monotone equation constraints arising in biochemistry”, ref OptBioSys.	€190,000 May 2018–Dec 2020
PI and coordinator. <i>FNR PRIDE DTU</i> , “Critical transitions in complex systems: from theory to applications”, Total 11 PhD grants, ref 10907093.	€2,105,750 Sept 2017–Aug 2022
PI. <i>University of Luxembourg IRP</i> , “Predicting the progression of Parkinson’s disease”, ref PPPD.	€166,500 Jan 2017–Dec 2019
PI. <i>FNR CORE</i> , “Genome-wide dynamical modelling differentially-regulated systems with application to the human T cell response”, ref C14/BM/8231540.	€476,000 Sept 2015–Aug 2018
PI and co-ordinator. <i>ERASysAPP</i> , “Increasing crops biomass by uncovering the circadian clock network using dynamical models”, ref INTER/SYSAPP/14/02. Joint grant with Heinrich Heine University, University of Cyprus, Linköping University and Syngenta, total €833,022.	€323,000 Jan 2015–Dec 2018
Co-Investigator. <i>BBSRC</i> , “A Linear Systems Toolkit for Biology”, ref BB/M00113X/1. PI: Dr Alex Webb.	£297,684 Jan 2015–Dec 2018
PI. <i>FNR Aides à la Formation-Recherche (AFR)</i> , 5 PhD and 1 Postdoc. Total around	€1,000,000 2013–2022
PI. <i>EPSRC</i> , “Control Engineering Inspired Design Tools for Synthetic Biology”, ref EP/I03210X/1. Joint grant with Oxford University (EP/I031944/1) and Imperial College London (EP/I032223/1), total £1,105,658.	£313,139 April 2012–Sept 2015
PI. <i>EPSRC International collaboration sabbaticals</i> , “Analysis, Design and Control of Biological Circuits and Bio-Inspired Networks”, ref EP/I029753/1.	£121,683 Jan–Sept 2010
Co-Investigator. <i>EPSRC programme grant</i> , “Control For Energy and Sustainability”, ref EP/G066477/1. Responsible for a PhD studentship; lead by Prof Vinter (Imperial College).	£5,779,867 Oct 2009–Sept 2014
PI. <i>Microsoft Research/DHPA PhD Scholarship Program</i> , “Robust Network Reconstruction with Applications to Biology”, ref PhD Scholarship Program 3118.	£90,000 Oct 2009–Sept 2012
PI. <i>EPSRC</i> , “Global Stability and Robustness Analysis of Oscillators with Application to Biology and Robotics”, ref EP/E02761X/1.	£295,732 Jan 2007–Dec 2009
Co-Investigator. <i>BBSRC</i> , “Analysis of the Arabidopsis Circadian Signalling Network”, ref BB/D017904/1. PI: Dr Alex Webb.	£390,000 Oct 2006–Sept 2009
PI. <i>Nuffield Foundation: Awards to Newly Appointed Lecturers in Science, Engineering and Mathematics 2005</i> , “Stability Robustness Analysis of Oscillations in Biochemical Networks”, ref NAL/01062/G.	£4,000 May 2005–April 2007
PI. <i>Marie Curie Intra-European Fellowship</i> , “Global Analysis and Synthesis of Oscillations”, ref MEIF-CT-2005-025509.	£55,139 Jan 2006–Dec 2006
PI. <i>Royal Society</i> , Conference grant	£1,600 July 2005
<i>Best Student Paper Award</i> at the Automatic Control Conference, Chicago, IL Paper title: Global Stability of Relay Feedback Systems	June 2000
Postdoctoral Fellowship from Portuguese Foundation for Science and Technology	2000–2001
Doctoral Fellowship from Portuguese Foundation for Science and Technology (JNICT)	1993–1997

Undergraduate Young Researcher Fellowship from JNICT 1993

TEACHING

University of Luxembourg, Luxembourg

Masters in System Biology, *Practicals in Bioinformatics*. First Semester

University of Cambridge, Cambridge, UK

Second year, Paper 6, *Linear Systems and Control*. Michaelmas

3F1, *Signals and Systems*. Michaelmas

4F2, *Robust Multivariable Control*. Lent

4G1, *Computational and Systems Biology*. Lent

iGEM, *International Genetically Engineered Machine competition*. Summer

Director of Studies and supervisor for Pembroke College Engineering students.

California Institute of Technology, Pasadena, CA

CDS 212, *Introduction to Modern Control*. Falls 2001, 2002, and 2003

CDS 213, *Robust Control*. Winters 2002, 2003, and 2004

Resident Associate Fall 2001–Spring 2004

Massachusetts Institute of Technology Cambridge, MA

6.011, *Intro. to Communication, Control, and Signal Processing* Spring 2000

6.003, *Signals and Systems* Fall 1998

6.241, *Dynamic Systems* Fall 1996

Graduate Resident Tutor 1996–2001

INESC - Institute of Systems and Control Engineering Porto, Portugal

Eng. Economic Analysis and Project Management 1992–1993

BOOK CHAPTERS

Alexandre Mauroy and Jorge Gonçalves. *Parameter Estimation and Identification of Nonlinear Systems with the Koopman Operator*, in *The Koopman Operator in Systems and Control*, Ed. A Mauroy, I Mezic, and Y Susuki, Springer, pages 335-357, 2020.

Rudi Balling, Jorge Gonçalves, Stefano Magni, Laurent Mombaerts, Alice Oldano and Alexander Skupin. *From Diagnosing Diseases to Predicting Diseases*, in *Curious 2018: Future Insights in Science and Technology*, Ed. U Betz, Springer, pages 95-103, 2019.

Alberto Carignano, Ye Yuan, Neil Dalchau, Alex Webb and Jorge Gonçalves. *Understanding and Predicting Biological Networks Using Linear System Identification*, in *A Systems Theoretic Approach to Systems and Synthetic Biology I: Models and System Characterizations*, Eds. V Kulkarni, G Stan and K Raman, Springer Verlag, 2014.

Abdullah Hamadeh, Jorge Gonçalves and Guy-Bart Stan. *Analysis of synchronizing biochemical networks via incremental dissipativity*, in *A Systems Theoretic Approach to Systems and Synthetic Biology II: Analysis and Design of Cellular Systems*, Eds. V Kulkarni, G Stan and K Raman, Springer Verlag, 2014.

Jorge Gonçalves and Sean Warnick. *Dynamical Structure Functions in Network Reconstruction*, in *Control Theory and Systems Biology*, Eds. B Ingalls and Pecc Iglesias, MIT press, November 2009.

Mehri Baniasadi, Daniele Proverbio, Jorge Gonçalves, Frank Hertel and Andreas Husch. *An Open-Source Toolbox for Efficient Approximation of Deep Brain Stimulation Electric Fields*, NeuroImage, accepted 2020.

Junyang Jin, Ye Yuan and Jorge Gonçalves. *A Full Bayesian Approach to Sparse Network Inference using Heterogeneous Datasets*, IEEE Transactions on Automatic Control, accepted, 2020.

Atte Aalto, Lauri Viitasaari, Pauliina Ilmonen, Laurent Mombaerts and Jorge Gonçalves. *Gene regulatory network inference from sparsely sampled noisy data*, Nature Communications, 11:3493, 2020.

Junyang Jin, Ye Yuan and Jorge Gonçalves. *High Precision Variational Bayesian Inference of Sparse Linear Networks*, Automatica, accepted, 2020.

Alexandre Mauroy and Jorge Gonçalves. *Koopman-Based Lifting Techniques for Nonlinear Systems Identification*, IEEE Transactions on Automatic Control, Vol. 65, Issue 6, pages 2550-2565, June 2020.

Li Yan, Hai-Tao Zhang, Jorge Gonçalves, Yang Xiao, Maolin Wang, Yuqi Guo, Chuan Sun, Xiuchuan Tang, Liang Jing, Mingyang Zhang, Xiang Huang, Ying Xiao, Haosen Cao, Yanyan Chen, Tongxin Ren, Fang Wang, Yaru Xiao, Sufang Huang, Xi Tan, Niannian Huang, Bo Jiao, Cheng Cheng, Yong Zhang, Ailin Luo, Laurent Mombaerts, Junyang Jin, Zhiguo Cao, Shusheng Li, Hui Xu and Ye Yuan. *An interpretable mortality prediction model for COVID-19 patients*, Nature Machine Intelligence, May 2020.

Lukas Müller, Laurent Mombaerts, Alex Webb, Jorge Gonçalves and Maria von Korff. *Differential effects of day-night cues and the circadian clock on the barley transcriptome*, Plant Physiology, March 2020.

Johan Markdahl, Johan Thunberg and Jorge Gonçalves. *High-dimensional Kuramoto models on Stiefel manifolds synchronize complex networks almost globally*, Automatica, Vol. 113, March 2020.

Ye Yuan, Xiuchuan Tang, Wei Zhou, Wei Pan, Xiuting Li, Hai-Tao Zhang, Han Ding and Jorge Gonçalves. *Data Driven Discovery of Cyber Physical Systems*, Nature Communications, 10:4894, 2019.

Florian Bernard, Johan Thunberg, Jorge Gonçalves and Christian Theobalt. *Synchronisation of Partial Multi-Matchings via Non-negative Factorisations*, Pattern Recognition, Vol. 92, pages 146-155, August 2019.

Laurent Mombaerts, Alberto Carignano, Fiona Robertson, Timothy Hearn, Jin Junyang, David Hayden, Zoe Rutterford, Carlos Hotta, Katherine Hubbard, Ye Yuan, Matthew Hannah, Jorge Gonçalves and Alex Webb. *Dynamical Differential Expression (DyDE) Reveals the Period Control Mechanisms of the Arabidopsis Circadian Oscillator*, PLoS Computational Biology, January 2019.

Johan Thunberg, Johan Markdahl, Florian Bernard and Jorge Gonçalves. *A lifting method for analyzing distributed synchronization on the unit sphere*, Automatica, Vol. 96, pages 253-258, October 2018.

Andreas Husch, Mikkel Petersen, Peter Gemmar, Jorge Gonçalves, Niels Sunde and Frank Hertel. *Post-operative deep brain stimulation assessment: Automatic data integration and report generation*, Brain Stimulation, Vol. 11, Issue 4, pages 863-866, July-August 2018.

Johan Thunberg, Johan Markdahl and Jorge Gonçalves. *Dynamic controllers for column synchronization of rotation matrices: a QR-factorization approach*, Automatica, Vol. 93, pages 20-25, July 2018.

Wei Pan, Ye Yuan, Lennart Ljung, Jorge Gonçalves and Guy-Bart Stan. *Identification of Nonlinear State-Space Systems from Heterogeneous Datasets*, IEEE Transactions on Control of Network Systems, Special Issue on Approaches to Control Biological and Biologically Inspired Networks, Vol. 5, Issue 2, pages 737-747, June 2018.

- Johan Markdahl, Johan Thunberg and Jorge Gonçalves. *Almost Global Consensus on the n -Sphere*, IEEE Transactions on Automatic Control, Vol. 63, Issue 6, pages 1664-1675, June 2018.
- Andreas Husch, Mikkel Petersen, Peter Gemmar, Jorge Gonçalves and Frank Hertel. *PaCER - A fully automated method for electrode trajectory and contact reconstruction in deep brain stimulation*, NeuroImage: Clinical, Vol. 17, pages 80-89, 2017.
- Johan Thunberg, Jorge Gonçalves and Xiaoming Hu. *Local Lyapunov Functions for Consensus in Switching Nonlinear Systems*, IEEE Transactions on Automatic Control, Vol. 62, Issue 12, pages 6466-6472, December 2017.
- Moonyong Lee, Le Quang Minh, Pham Luu Trung Duong, Jorge Gonçalves and Ezra Kwok. *A two-stage approach of multiplicative dimensional reduction and polynomial chaos for global sensitivity analysis and uncertainty quantification with a large number of process uncertainties*, Journal of the Taiwan Institute of Chemical Engineers, Vol. 78, pages 254-264, September 2017.
- Maria Pavlou, Nicolo Colombo, Sandra Fuertes-Alvarez, Sarah Nicklas, Maria Marin, Jorge Gonçalves and Jens Schwamborn. *Expression of the Parkinson's disease associated gene alpha-synuclein is regulated by the neuronal cell fate determinant TRIM32*, Molecular Neurobiology, Vol. 54, Issue 6, pages 4257-4270, August 2017.
- David Hayden, Ye Yuan and Jorge Gonçalves. *Network Identifiability from Intrinsic Noise*, IEEE Transactions on Automatic Control, Vol. 62, Issue 8, pages 3717-3728, August 2017.
- Johan Thunberg, Florian Bernard and Jorge Gonçalves. *Distributed Methods for Synchronization of Orthogonal Matrices over Graphs*, Automatica, Vol. 80, pages 243-252, June 2017.
- Ye Yuan, Anurag Rai, Enoch Yeung, Guy-Bart Stan, Sean Warnick and Jorge Gonçalves. *A minimal realization technique for the dynamical structure function of a class of LTI systems*, IEEE Transactions on Control of Network Systems, Vol. 4, Issue 2, pages 301-311, June 2017.
- Florian Bernard, Luis Salamanca, Johan Thunberg, Alexander Tack, Dennis Jentsch, Hans Lamecker, Stefan Zachow, Frank Hertel, Jorge Gonçalves and Peter Gemmar. *Shape-aware Surface Reconstruction from Sparse 3D Point-Clouds*, Medical Image Analysis Journal, Vol. 38, pages 77-89, May 2017.
- Pham Duong, Le Minh, Tram Pham, Jorge Gonçalves and Moonyong Lee. *Uncertainty quantification and global sensitivity analysis of complex chemical processes with large number of input parameters using compressive polynomial chaos*, Chemical Engineering Research and Design, Vol. 115, Part A, pages 204-213, November 2016.
- David Hayden, Young Chang, Jorge Gonçalves and Claire Tomlin. *Sparse Network Identifiability via Compressed Sensing*, Automatica, Vol. 68, pages 9-17, June 2016.
- Johan Thunberg, Jorge Gonçalves and Xiaoming Hu. *Consensus and Formation Control on $SE(3)$ for switching topologies*, Automatica, Vol. 66, pages 109-121, April 2016.
- Xin Yang, Ye Yuan, Zhiqiang Long, Jorge Gonçalves and P Palmer. *Robust stability analysis of active voltage control for high-power IGBT switching by Kharitonov's theorem*, IEEE Transactions on Power Electronics, Vol. 31, Issue 3, pages 2584-2595, March 2016.
- Wei Pan, Ye Yuan, Jorge Gonçalves and Guy-Bart Stan. *A sparse Bayesian approach to the identification of nonlinear state-space systems*, IEEE Transactions on Automatic Control, Vol. 61, Issue 1, pages 182-187, January 2016.
- Christophe Trefois, Paul Antony, Jorge Gonçalves, Alexander Skupin and Rudi Balling. *Critical transitions in chronic disease: transferring concepts from ecology to systems medicine*, Current Opinion in Biotechnology, Vol. 34, pages 48-55, August 2015.
- Ye Yuan, Keith Glover and Jorge Gonçalves. *On minimal realisations of dynamical structure functions*, Automatica, Vol. 55, pages 159-164, May 2015

- Wei Pan, Ye Yuan, Henrik Sandberg, Jorge Gonçalves and Guy-Bart Stan. *Online fault diagnosis for nonlinear power systems*, Automatica, Vol. 55, pages 27-36, May 2015.
- William Kuan, Andrea Kasis, Ye Yuan, S Mason, A Lazar, Roger Barker and Jorge Gonçalves. *Modelling the natural history of Huntington's disease progression*, Journal of Neurology, Neurosurgery, and Psychiatry, Vol. 86, pages 1143-1149, 2015.
- Ye Yuan, Guy-Bart Stan, Ling Shi, Mauricio Barahona and Jorge Gonçalves. *Decentralised minimum-time consensus*, Automatica, Vol. 49, No. 5, pages 1227-1235, May 2013.
- Eva Herrero, Elsebeth Kolmos, Nora Bujdoso, Ye Yuan, Mengmeng Wang, Markus Berns, Heike Uhlworm, George Coupland, Reena Saini, Mariusz Jaskolski, Alex Webb, Jorge Gonçalves and Seth Davis. *EARLY FLOWERING₄ Recruitment of EARLY FLOWERING₃ in the Nucleus Sustains the Arabidopsis Circadian Clock*, Plant Cell, Vol. 24, No. 2, pages 428-443, February 2012.
- Abdullah Hamadeh, Guy-Bart Stan, Rodolphe Sepulchre and Jorge Gonçalves. *Global state synchronization in networks of cyclic feedback systems*, IEEE Transactions on Automatic Control, Vol. 57, No. 2, pages 478-483, 2012.
- Ye Yuan, Guy-Bart Stan, Sean Warnick and Jorge Gonçalves. *Robust dynamical network structure reconstruction*, Automatica, special issue on Systems Biology, Vol. 47, Issue 6, June 2011.
- Neil Dalchau, Seong Baek, Helen Briggs, Fiona Robertson, Antony Dodd, Michael Gardner, Matthew Stancombe, Michael Haydon, Guy-Bart Stan, Jorge Gonçalves and Alex Webb. *The circadian oscillator gene GIGANTEA mediates a long-term response of the Arabidopsis thaliana circadian clock to sucrose*, PNAS, Vol. 108, No. 12, March 2011.
- Neil Dalchau, Katharine Hubbard, Fiona Robertson, Carlos Hotta, Helen Briggs, Guy-Bart Stan, Jorge Gonçalves and Alex Webb. *Correct biological timing in Arabidopsis requires multiple light signaling pathways*, PNAS, Vol. 107, No. 29, July 2010.
- Colin Jones and Jorge Gonçalves, *A Cost-Effective Atomic Force Microscope for Undergraduate Control Laboratories*, IEEE Transactions on Education, Vol. 53, No. 2, May 2010.
- Nuno Martins and Jorge Gonçalves. *A Linear Programming Approach to Parameter Fitting for the Master Equation*, IEEE Transactions on Automatic Control, Vol. 54, No. 10, October 2009.
- Abdullah Hamadeh and Jorge Gonçalves. *Reachability Analysis of Continuous-Time Piecewise Affine Systems*, Automatica, Vol. 44, No. 12, December 2008.
- Jorge Gonçalves and Sean Warnick. *Necessary and Sufficient Conditions for Dynamical Structure Reconstruction of LTI Networks*, IEEE Transactions on Automatic Control, Vol. 53, No. 7, August 2008.
- Tobias May, Lee Eccleston, David Markusic, Jurgen Seppen, Sabrina Herrmann, Hansjorg Hauser, Jorge Gonçalves and Dagmar Wirth. *Bimodal and Hysteretic Expression in Mammalian Cells from a Synthetic Gene Circuit*, Public Library of Science ONE, Vol. 3, No. 6, 2008.
- Antony Dodd, Michael Gardner, Carlos Hotta, Katharine Hubbard, Neil Dalchau, John Love, Jean-Maurice Assie, Fiona Robertson, Mia Jakobsen, Jorge Gonçalves, Dale Sanders and Alex Webb. *The Arabidopsis circadian clock incorporates a cADPR-based feedback loop*, Science, Vol. 318, No. 5857, 14 December 2007.
- Serafim Rodrigues, Jorge Gonçalves and John Terry. *Existence and stability of limit cycles in a macroscopic neuronal population model*, Physica D: Nonlinear Phenomena, Vol. 233, Issue 1, September 2007.
- K. Bernhardt, E. Carter, N. Chand, J. Lee, Y. Xu, X. Zhu, J. Ajioka, J. Gonçalves, J. Haseloff, G. Micklem and D. Rowe. *New tools for self-organised pattern formation*, IET Synthetic Biology, Vol. 1, No. 1-2, 2007.

Jorge Gonçalves. *Regions of Stability for Limit Cycle Oscillations in Piecewise Linear Systems*, IEEE Transactions on Automatic Control, Vol. 50, No. 11, November 2005.

Jorge Gonçalves, Alexandre Megretski, and Munther A. Dahleh. *Global Analysis of Piecewise Linear Systems Using Impact Maps and Quadratic Surface Lyapunov Functions*, IEEE Transactions on Automatic Control, Vol. 48, No. 12, December 2003.

Jorge Gonçalves. *\mathcal{L}_2 -Gain of Double Integrators with Saturation Nonlinearity*, IEEE Transactions on Automatic Control, Vol. 47, No. 12, December 2002.

Jorge Gonçalves, Alexandre Megretski, and Munther Dahleh. *Global Stability of Relay Feedback Systems*, IEEE Transactions on Automatic Control, Vol. 46, No. 4, April 2001.

Jorge Gonçalves and Munther Dahleh. *Necessary Conditions for Robust Stability of a Class of Nonlinear Systems*, Automatica, Vol. 34, No. 6, 1998.

CONFERENCE
PUBLICATIONS

Johan Markdahl, Daniele Proverbio and Jorge Gonçalves. *Robust synchronization of heterogeneous robot swarms on the sphere*, IEEE Conference on Decision and Control, Jeju Island, Republic of Korea, December 2020.

Rene Bremm, Kalus Koch, Rejko Kruger, Frank Hertel and Jorge Gonçalves. *A rule-based expert system for real-time feedback-control in deep brain stimulation*, Conference of the German Society for Biomedical Engineering, Leipzig, Germany, September 2020.

Rene Bremm, Kalus Koch, Rejko Kruger, Jorge Gonçalves and Frank Hertel. *Analysis and visualisation of tremor dynamics in deep brain stimulation patients*, Conference of the German Society for Biomedical Engineering, Leipzig, Germany, September 2020.

Zuogong Yue and Jorge Gonçalves. *Network Stability, Realisation and Random Model Generation*, IEEE Conference on Decision and Control, Nice, France, December 2019.

Atte Aalto and Jorge Gonçalves. *Linear system identification from ensemble snapshot observations*, IEEE Conference on Decision and Control, Nice, France, December 2019.

Laurent Mombaerts, Atte Aalto, Johan Markdahl and Jorge Gonçalves. *A multifactorial evaluation framework for gene regulatory network reconstruction*, IFAC Conference on Foundations of Systems Biology in Engineering, Valencia, Spain, October 2019.

Johan Markdahl, Johan Thunberg and Jorge Gonçalves. *All Graphs are S^n -Synchronizing; What About $St(p, n)$?* IEEE Conference on Decision and Control, Melbourne, Miami, FL, December 2018.

Alexandre Mauroy and Jorge Gonçalves. *Dual systems identification methods based on Koopman operator theory*, Society of Instrument and Control Engineers Annual Conference, Nara, Japan, September 2018.

Zuogong Yue, Johan Thunberg, Lennart Ljung and Jorge Gonçalves. *On Definition and Inference of Nonlinear Boolean Dynamic Networks*, IEEE Conference on Decision and Control, Melbourne, Australia, December 2017.

Johan Markdahl, Nicolo Colombo, Johan Thunberg and Jorge Gonçalves. *Experimental design trade-offs for gene regulatory network inference: an in silico study of the yeast *Saccharomyces cerevisiae* cell cycle*, IEEE Conference on Decision and Control, Melbourne, Australia, December 2017.

Jin Junyang, Ye Yuan, Wei Pan, Claire Tomlin, Alex Webb and Jorge Gonçalves. *Identification of nonlinear sparse networks using sparse Bayesian learning*, IEEE Conference on Decision and Control, Melbourne, Australia, December 2017.

Johan Thunberg, Florian Bernard and Jorge Gonçalves. *Distributed Synchronization of Euclidean Transformations with Guaranteed Convergence*, IEEE Conference on Decision and Control, Melbourne, Australia, December 2017.

Zuogong Yue, Johan Thunberg, Wei Pan, Lennart Ljung and Jorge Gonçaves. *Linear Dynamic Network Reconstruction from Heterogeneous Datasets*, IFAC World Congress, Toulouse, France, July 2017.

Alexandre Mauroy and Jorge Gonçaves. *Linear identification of nonlinear systems: A lifting technique based on the Koopman operator*, IEEE Conference on Decision and Control, Las Vegas, NV, December 2016.

Johan Markdahl and Jorge Gonçaves. *Global Convergence Properties of a Consensus Protocol on the n -Sphere*, IEEE Conference on Decision and Control, Las Vegas, NV, December 2016.

Laurent Mombaerts, Alexandre Mauroy and Jorge Gonçaves. *Optimising Time-Series Experimental Design for Modelling of Circadian Rhythms: The Value of Transient Data*, IFAC Conference on Foundations of Systems Biology in Engineering, Magdeburg, Germany, October 2016.

Aivar Sootla, Alexandre Mauroy and Jorge Gonçaves. *Shaping Pulses to Control Bistable Monotone Systems Using Koopman Operator*, IFAC Symposium on Nonlinear Control Systems, Monterey, California, August 2016.

Zuogong Yue, Johan Thunberg and Jorge Gonçaves. *Inverse Problems for Matrix Exponential in System Identification: System Aliasing*, Symposium on Mathematical Theory of Networks and Systems, Minneapolis, Minnesota, July 2016.

Johan Thunberg, Nicolo Colombo, Zuogong Yue and Jorge Gonçaves. *An Iterative Projection Method for Synchronization of Invertible Matrices Over Graphs*, Symposium on Mathematical Theory of Networks and Systems, Minneapolis, Minnesota, July 2016.

Nicolo Colombo, Johan Thunberg and Jorge Gonçaves. *Global Optimality Bounds for ICA Algorithms*, Symposium on Mathematical Theory of Networks and Systems, Minneapolis, Minnesota, July 2016.

Johan Markdahl, Wenjun Song, Xiaoming Hu and Jorge Gonçaves. *Global and Invariant Aspects of Consensus on the N -Sphere*, Symposium on Mathematical Theory of Networks and Systems, Minneapolis, Minnesota, July 2016.

Florian Bernard, Peter Gemmar, Frank Hertel, Jorge Gonçaves and Johan Thunberg. *Linear Shape Deformation Models with Local Support Using Graph-based Structured Matrix Factorisation*, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Las Vegas, NV, June 2016.

Florian Bernard, Nikos Vlassis, Peter Gemmar, Andreas Husch, Johan Thunberg, Jorge Gonçaves and Frank Hertel. *Fast Correspondences for Statistical Shape Models of Brain Structures*, SPIE Medical Imaging Conference, San Diego, CA, March 2016.

Zuogong Yue, Ye Yuan and Jorge Gonçaves. *Dynamical Structure Function and Granger Causality: Similarities and Differences*, IEEE Conference on Decision and Control, Osaka, Japan, December 2015.

Ania Baetica, Ye Yuan, Richard Murray and Jorge Gonçaves. *A stochastic framework for the design of transient and steady state behavior of biochemical reaction networks*, IEEE Conference on Decision and Control, Osaka, Japan, December 2015.

Alberto Carignano, Jin Junyang, Alex Webb and Jorge Gonçaves. *Assessing the effect of unknown widespread perturbations in complex systems using the ν -gap*, IEEE Conference on Decision and Control, Osaka, Japan, December 2015.

Enoch Yeung, Jongmin Kim, Jorge Gonçaves and Richard Murray. *Global Network Identification from Reconstructed Dynamical Structure Subnetworks: Applications to Biochemical Reaction Networks*, IEEE Conference on Decision and Control, Osaka, Japan, December 2015.

Wei Pan, Ye Yuan, Lennart Ljung, Jorge Gonçaves and Guy-Bart Stan. *Identifying Biochemical Reaction Networks From Heterogeneous Datasets*, IEEE Conference on Decision and Control, Osaka,

Japan, December 2015.

Florian Bernard, Luis Salamanca, Johan Thunberg, Frank Hertel, Jorge Gonçalves and Peter Gemmar. *Shape-aware 3D Interpolation using Statistical Shape Models*, Symposium on Statistical Shape Models and Applications, Delemont, Switzerland, October 2015.

Florian Bernard, Johan Thunberg, Peter Gemmar, Frank Hertel, Andreas Husch and Jorge Gonçalves. *A Solution for Multi-Alignment by Transformation Synchronisation*, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Boston, MA, June 2015.

Tao Yang, Ye Yuan, Kezhi Li, Jorge Gonçalves and Karl Johansson. *Finite-time road grade computation for a vehicle platoon*, IEEE Conference on Decision and Control, Los Angeles, CA, December 2014.

David Hayden, Ye Yuan and Jorge Gonçalves. *Network Reconstruction from Intrinsic Noise: Non-minimum Phase Systems*, IFAC World Congress, Cape Town, South Africa, August 2014.

Peyman Gifani and Jorge Gonçalves. *Biexcitability and Bursting Mechanisms in Neural and Genetic Circuits*, IFAC World Congress, Cape Town, South Africa, August 2014.

David Hayden, Ye Yuan and Jorge Gonçalves. *Network Reconstruction from Intrinsic Noise*, American Control Conference, Portland, OR, June 2014.

Qingqing Huang, Ye Yuan, Jorge Gonçalves and Munther Dahleh. *H₂-Based Network Volatility Measures*, American Control Conference, Portland, OR, June 2014.

Vasu Chetty, David Hayden, Jorge Gonçalves and Sean Warnick. *Robust Signal-Structure Reconstruction*, IEEE Conference on Decision and Control, Florence, Italy, December 2013.

Wei Pan, Ye Yuan, Henrik Sandberg, Jorge Gonçalves and Guy-Bart Stan. *Real-time Fault Diagnosis for Large-Scale Nonlinear Power Networks*, IEEE Conference on Decision and Control, Florence, Italy, December 2013.

Jerry Thia, Ye Yuan, Ling Shi and Jorge Gonçalves. *Distributed Kalman Filter with minimum-time covariance computation*, IEEE Conference on Decision and Control, Florence, Italy, December 2013.

David Hayden, Ye Yuan and Jorge Gonçalves. *Network reconstruction using knock-out and over-expression data*, European Control Conference, Zurich, Switzerland, July 2013.

Wei Pan, Ye Yuan, Jorge Gonçalves and Guy-Bart Stan. *Reconstruction of Arbitrary Biochemical Reaction Networks: A Compressive Sensing Approach*, IEEE Conference on Decision and Control, Maui, Hawaii, December 2012.

Enoch Yeung, Jongmin Kim, Ye Yuan, Jorge Gonçalves and Richard M. Murray. *Quantifying Crosstalk in Biochemical Systems*, IEEE Conference on Decision and Control, Maui, Hawaii, December 2012.

David Hayden, Ye Yuan and Jorge Gonçalves. *Robust Network Reconstruction in Polynomial Time*, IEEE Conference on Decision and Control, Maui, Hawaii, December 2012.

Julius Adebayo, Taylor Southwick, Vasu Chetty, Enoch Yeung, Ye Yuan, Jorge Gonçalves, Julianne Grose, John Prince, Guy-Bart Stan and Sean Warnick. *Dynamical Structure Function Identifiability Conditions Enabling Signal Structure Reconstruction*, IEEE Conference on Decision and Control, Maui, Hawaii, December 2012.

Vasu Chetty, Julius Adebayo, Andrew Mathis, Desiree Demille, Stewart Morley, Tamil Anthony-muthu, Ye Yuan, Jorge Gonçalves, Julianne Grose, John Prince, Guy-Bart Stan and Sean Warnick. *In-silico Robust Reconstruction of the Per-Arnt-Sim Kinase Pathway using Dynamical Structure Functions*, Foundations of Systems Biology in Engineering, Tsuruoka, Japan, October 2012.

Ye Yuan, Jun Liu, Richard Murray and Jorge Gonçalves. *Decentralised minimal-time dynamic consensus*, American Control Conference, Montréal, Canada, July 2012.

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- Ye Yuan, Guy-Bart Stan, Sean Warnick and Jorge Gonçalves. *Robust dynamical network reconstruction*, IEEE Conference on Decision and Control, Atlanta, GA, December 2010.
- Ye Yuan and Jorge M. Gonçalves. *Minimal-time network reconstruction for DTLTI systems from partial state observations*, IEEE Conference on Decision and Control, Atlanta, GA, December 2010.
- Abdullah Hamadeh, Guy-Bart Stan and Jorge Gonçalves. *Constructive Synchronization of Networked Feedback Systems*, IEEE Conference on Decision and Control, Atlanta, GA, December 2010.
- Enoch Yeung, Jorge Gonçalves, Henrik Sandberg and Sean Warnick. *Representing Structure in Linear Interconnected Dynamical Systems*, IEEE Conference on Decision and Control, Atlanta, GA, December 2010.
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- Ye Yuan, Guy-Bart Stan, Ling Shi, Mauricio Barahona and Jorge Gonçalves. *Minimal-time uncertain output final value of unknown DT-LTI systems with application to the decentralised network consensus problem*, Symposium on Mathematical Theory of Networks and Systems, Budapest, Hungary, July 2010.
- Robert Tonita, Jorge Gonçalves, Ioannis Lestas and Glenn Vinnicombe. *Understanding fluctuations and limitations in a multi-sector model of the economy with delays and intrinsic noise*, American Control Conference, Baltimore, MD, July 2010.
- Enoch Yeung, Jorge Gonçalves, Henrik Sandberg and Sean Warnick. *Network Structure Preserving Model Reduction with Weak A Priori Structural Information*, IEEE Conference on Decision and Control 2009, Shanghai, China, December 2009.
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- Ye Yuan, Guy-Bart Stan, Ling Shi and Jorge Gonçalves. *Decentralized final value theorem for discrete-time LTI systems with application to minimal-time distributed consensus*, IEEE Conference on Decision and Control 2009, Shanghai, China, December 2009.
- Enoch Yeung, Jorge Gonçalves, Henrik Sandberg and Sean Warnick. *Network Structure Preserving Model Reduction: Results of a Simulation Study*, Foundations of Systems Biology in Engineering, Denver, CO, August 2009.
- C Ward, Enoch Yeung, T Brown, B Durtschi, S Weyerman, R Howes, Jorge Gonçalves, Henrik Sandberg and Sean Warnick. *A Comparison of Network Reconstruction Methods for Chemical Reaction Networks*, Foundations of Systems Biology in Engineering, Denver, CO, August 2009.
- Russell Howes, Lee Eccleston, Jorge Gonçalves, Guy-Bart Stan and Sean Warnick. *Dynamical structure analysis of sparsity and minimality heuristics for reconstruction of biochemical networks*, IEEE Conference on Decision and Control, Cancun, Mexico, December 2008.
- Abdullah Hamadeh, Jorge Goncalves, Guy-Bart Stan. *Robust Synchronization in Networks of Cyclic Feedback Systems*, IEEE Conference on Decision and Control, Cancun, Mexico, December 2008.
- Robert Tonita, Jorge Gonçalves, Ioannis Lestas and Glenn Vinnicombe. *Control Theory Methods*

for *Macro Models with Stochastic Micro Foundations*, International Economic Association World Congress, Istanbul, Turkey, June, 2008.

Jorge Gonçalves and Nuno Martins. *Batch control of the Master Equation: A linear programming approach*, Symposium on Mathematical Theory of Networks and Systems, Blacksburg, VA, July 2008.

Y Han, N Hengrung, Y Liew, S May, Y Miao, S Milde, X Soh, L Soirez, D Wyatt, Z Zhao, J Ajioka, J Brown, J Gonçalves, J Haseloff, G Micklem, T Southall, D Malyshev, J Crowe and L Wernisch. *Bacteria Online – University of Cambridge iGEM 2007 Project*, IET Conference on Synthetic Biology, Systems Biology and Bioinformatics, London, April 2008.

Adrian Salinas-Varela, Guy-Bart Stan and Jorge Gonçalves. *Global Asymptotic Stability of the Limit Cycle in Piecewise Linear Versions of the Goodwin Oscillator*, IFAC World Congress, Seoul, Korea, July 2008.

Robert Tonita, Jorge Gonçalves and Glenn Vinnicombe. *Heterogeneous Agent Models in Economics: A Study of Heterogenous Productivity of Sectors*, American Control Conference, Seattle, WA, June 2008.

Jorge Gonçalves, Russell Howes and Sean Warnick. *Dynamical structure functions for the reverse engineering of LTI networks*, IEEE Conference on Decision and Control, New Orleans, LA, December 2007.

Neil Dalchau, Jorge Gonçalves and Alex Webb. *Mathematical models of circadian Ca^{2+} oscillations*, International Conference on Systems Biology, Long Beach, CA, October 2007.

Russell Howes, Jorge Gonçalves and Sean Warnick. *Reconstruction of Biological Networks through Gene Silencing and Overexpression*, International Conference on Systems Biology, Long Beach, CA, October 2007.

Neil Dalchau, Jorge Gonçalves and Alex Webb. *Mathematical models for Ca^{2+} -based circadian signalling in plants*, Foundations of Systems Biology in Engineering, Stuttgart, Germany, September 2007.

Guy-Bart Stan, Abdullah Hamadeh, Rodolphe Sepulchre and Jorge Gonçalves. *Output synchronization in networks of cyclic biochemical oscillators*, American Control Conference, New York, NY, July 2007.

Damien Ernst, Guy-Bart Stan, Jorge Gonçalves, and Louis Wehenkel. *Clinical data based optimal STI strategies for HIV: a reinforcement learning approach*, IEEE Conference on Decision and Control, San Diego, CA, December 2006.

M. Gardner, C. Hotta, K. Hubbard, N. Dalchau, J. Gonçalves, A. Dodd and A. Webb. *Rhythmic regulation of Ca^{2+} signalling networks*, American Society of Plant Biologists abstract M1604 p77, 2006.

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Adrian Salinas, Antonis Papachristodoulou and Jorge Gonçalves. *On L_2 error bounds between systems*, Symposium on Mathematical Theory of Networks and Systems, Kyoto, Japan, July 2006.

Abdullah Hamadeh and Jorge Gonçalves. *Reachability Analysis of Continuous-Time Piecewise Linear Systems*, IEEE Conference on Decision and Control, Seville, Spain, December 2005.

Jorge Gonçalves, Tau-Mu Yi, and John Doyle. *Tradeoffs in Networks with Positive and Negative Feedback*, Foundations of Systems Biology in Engineering, Santa Barbara, CA, August 2005.

Tau-Mu Yi, Maryam Fazel, Xin Liu, Tosin Otitoju, Jorge Gonçalves, Antonis Papachristodoulou,

Stephen Prajna and John Doyle. *Application of Robust Model Validation using SOSTOOLS to the Study of G-Protein Signalling in Yeast*, Foundations of Systems Biology in Engineering, Santa Barbara, CA, August 2005.

Jorge Gonçalves and Tau-Mu Yi. *Drosophila Circadian Rhythms: Stability Robustness Analysis and Model Reduction*, Symposium on Mathematical Theory of Networks and Systems, Leuven, Belgium, July 2004.

Demetri P. Spanos and Jorge Gonçalves. *Finding surface Lyapunov functions through sum-of-squares programming*, American Control Conference, Boston, MA, June 2004.

Jorge Gonçalves. *Regions of Stability for Limit Cycles of Piecewise Linear Systems*, IEEE Conference on Decision and Control, Maui, Hawaii, December 2003.

Jorge Gonçalves. *\mathcal{L}_2 -Gain of Double Integrators with Saturation Nonlinearity*, IFAC World Congress, Barcelona, Spain, July 2002.

Jorge Gonçalves. *Global Asymptotic Stability of Oscillations with Sliding Modes*, IFAC World Congress, Barcelona, Spain, July 2002.

Jorge Gonçalves. *Quadratic Surface Lyapunov Functions in the Analysis of Feedback Systems with Double Integrators and Saturations*, Mediterranean Control Conference, Lisbon, Portugal, July 2002.

Jorge Gonçalves, Alexandre Megretski, and Munther A. Dahleh. *Global Analysis of Piecewise Linear Systems Using Impact Maps and Quadratic Surface Lyapunov Functions*, European Control Conference, Porto, Portugal, September 2001.

Jorge Gonçalves. *Quadratic Surface Lyapunov Functions in Global Stability Analysis of Saturation Systems*, American Control Conference, Arlington, VA, June 2001.

Jorge Gonçalves. *Global Stability Analysis of On/Off Systems*, IEEE Conference on Decision and Control, Sydney, Australia, December 2000.

Jorge Gonçalves, Alexandre Megretski, and Munther Dahleh. *Global Stability of Relay Feedback Systems*, American Control Conference, Chicago, IL, June 2000.

Jorge Gonçalves, Alexandre Megretski, and Munther Dahleh. *Semi-Global Analysis of Relay Feedback Systems*, IEEE Conference on Decision and Control, Tampa, FL, December 1998.

Jorge Gonçalves and Munther Dahleh. *Necessary and Sufficient Conditions for Robust Stability of a Class of Nonlinear Systems*, IEEE Conference on Decision and Control, New Orleans, LA, December 1995.

ACTIVITIES

Member of the Human Frontier Science Program (HFSP) Review Committee for Research Grants, 2014 to 2018.

Associate Editor for the *European Control Conference*, 2014 to 2021.

Associate Editor for the *Mediterranean Control Conference*, 2014 to 2020.

Elected IEEE Senior Member, 2018.

Scientific Committee member of the *International Conference on Systems Biology (ICSB)*, 2019.

Member of the International Programme Committee (IPC) of the 6th International Conference Foundations of Systems Biology in Engineering (FOSBE), 2016.

Member of the evaluation process of the 1st Call on Personalized Medicine Projects, National Institute of Health Carlos III, Spain, 2015.

Invited speaker at the Summer School on Data-Driven Modelling for Control, Zandvoort, The Netherlands, June 2014.

Member of the Program Committee of the *European Control Conference*, Zurich, Switzerland, 2013.

Member of the Planning Group of the Natural Sciences Tripos Part III Course in Systems Biology.

Instructor and organiser member of the University of Cambridge team in the International Synthetic Biology Competition (iGEM), 2005–2013.

Assistant Director of Studies for Engineering students in Pembroke College, October, 2005–2013.

Teaching Committee (2006 to 2010), Planning and Finance Committee (2011 to 2012), Pembroke College.

Secretary of EIGSC, Department of Engineering, University of Cambridge (2006).

Member of the Assessment Committee of the IRCSET Postdoctoral Fellowship scheme from the Irish Research Council for Science, Engineering and Technology (2006).

Member of the Program Committee of the *International Conference on Informatics in Control, Automation and Robotics*, Setúbal, Portugal 2004 (<http://www.icinco.org/>).

Organiser of the *Workshop on Robustness Analysis Tools with Applications to the Biological and Physical Sciences: The Challenge of Complexity*, Kavli Institute for Theoretical Physics, UCSB, March 2003 (http://online.kitp.ucsb.edu/online/bionet_w03/).

Co-chair of IEEE Technical Committee on Robust Control.

Member of the Program Committee of the 41st *IEEE Conference on Decision and Control*, Las Vegas, NV, December 2002.