

# GIACOMO BAGGIO

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APPOINTMENTS	<b>Assistant Professor</b> Department of Information Engineering <i>University of Padova, Italy</i>	Oct. 2019 – Present
	<b>Postdoctoral Scholar</b> Department of Mechanical Engineering <i>University of California, Riverside, USA</i> - Advisor: Prof. F. Pasqualetti	Mar. 2018 – Sep. 2019
	<b>Visiting Scholar</b> Department of Engineering <i>University of Cambridge, UK</i> - Advisor: Prof. R. Sepulchre	Sep. 2015 – June 2016
EDUCATION	<b>Ph.D. in Information Engineering</b> Department of Information Engineering <i>University of Padova, Italy</i> - Advisor: Prof. A. Ferrante - Final grade: cum laude	Feb. 2018
	<b>“Laurea Magistrale” (M.Sc. equivalent), Automation Engineering</b> <i>University of Padova, Italy</i> - Final grade: 110/110 cum laude	April 2014
	<b>“Laurea Triennale” (B.Sc. equivalent), Mechatronics Engineering</b> <i>University of Padova, Italy</i> - Final grade: 110/110 cum laude	Sept. 2011
HONORS & AWARDS	<b>Roberto Tempo Best CDC Paper Award</b> <i>IEEE Control Systems Society</i>	2020
	<b>IEEE Control Systems Letters Outstanding Paper Award</b> <i>IEEE Control Systems Society</i>	2020
	<b>Best Student Paper Award (co-author)</b> <i>American Control Conference (ACC), 2019</i>	2019
	<b>Best Student Paper Award (student author)</b> <i>European Control Conference (ECC), 2018</i>	2018
	<b>Outstanding Master Thesis Recognition</b> <i>Department of Information Engineering, University of Padova, Italy</i>	2014

TEACHING  
EXPERIENCE

## University of Padova

Instructor:

- Systems Theory, “Laurea Magistrale” (M.Sc.), *Mechatronics Engineering* 2020-21
- Systems Theory, “Laurea Magistrale” (M.Sc.), *Mechatronics Engineering* 2019-20

Teaching assistant:

- Estimation and Filtering, “Laurea Magistrale” (M.Sc.), *Automation Engineering* 2016-17

## University of Cambridge

Teaching assistant:

- Signals and Systems (3F1), *Engineering Tripos Part IIA* 2015-16

## INVITED TALKS

Invited talk @ Data-driven Analysis and Control of Dynamical Systems

SIAM DS 21 minisymposium 2021

Invited talk @ Controlling Complex Networks: *When Control Theory Meets Network Science*

Networks 2021 satellite symposium 2021

Invited talk @ Numerical ODEs, Matrix Analysis and Data Science (NOMADS) seminars

Gran Sasso Science Institute 2020

Invited talk @ Polytechnic University of Turin,

Department of Mathematical Sciences, Turin 2018

Invited talk @ University of Padova,

Department of Mathematics, Padova 2017

## PUBLICATIONS

*Journal Papers*

1. G. Baggio, and S. Zampieri,  
“Non-normality Improves Information Transmission Performance of Network Systems”,  
*IEEE Transactions on Control of Network Systems*, 2021. In press.
2. G. Baggio, F. Ticozzi, P. D. Johnson, and L. Viola,  
“Dissipative Encoding of Quantum Information”,  
*Quantum Information & Computation*, 2021. In press.
3. G. Baggio, D. S. Bassett, and F. Pasqualetti,  
“Data-driven Control of Complex Networks”,  
*Nature Communications*, vol. 12, no. 1, pp. 1-13, 2021.
4. G. Baggio, V. Rutten, G. Hennequin, and S. Zampieri,  
“Efficient Communication in Complex Dynamical Networks: The Role of Matrix Non-Normality”,  
*Science Advances*, vol. 6, no. 22, eaba2282, 2020.
5. T. Menara, G. Baggio, D. S. Bassett, and F. Pasqualetti,  
“Conditions for Feedback Linearization of Network Systems”,  
*IEEE Control Systems Letters*, vol. 4, no. 3, pp. 578-583, July 2020.

6. T. Menara, **G. Baggio**, D. S. Bassett, and F. Pasqualetti,  
 “Stability Conditions for Cluster Synchronization in Networks of Heterogeneous Kuramoto Oscillators”,  
*IEEE Transactions on Control of Network Systems*, vol. 7 , no. 1, pp. 302-314, March 2020.
7. **G. Baggio**, V. Katewa and F. Pasqualetti,  
 “Data-Driven Minimum-Energy Controls for Linear Systems,”  
*IEEE Control Systems Letters*, vol. 3, no. 3, pp. 589-594, July 2019.
8. **G. Baggio**, A. Ferrante, and R. Sepulchre,  
 “Conal Distances Between Rational Spectral Densities”,  
*IEEE Transactions on Automatic Control*, vol. 64 , no. 5, pp. 1848-1857, May 2019.
9. B. Zhu and **G. Baggio**,  
 “On the Existence of a Solution to a Spectral Estimation Problem *à la* Byrnes–Georgiou–Lindquist”  
*IEEE Transactions on Automatic Control*, vol. 64 , no. 2 , pp. 820-825, 2019.
10. **G. Baggio** and A. Ferrante,  
 “Parametrization of Minimal Spectral Factors of Discrete-Time Rational Spectral Densities”  
*IEEE Transactions on Automatic Control*, vol. 64, no. 1, pp. 396-403, 2019.
11. **G. Baggio**,  
 “Further Results on the Convergence of the Pavon–Ferrante Algorithm for Spectral Estimation”  
*IEEE Transactions on Automatic Control*, vol. 63 , no. 10, pp. 3510-3515, 2018.
12. N. Bof, **G. Baggio**, and S. Zampieri,  
 “On the Role of Network Centrality in the Controllability of Complex Networks”  
*IEEE Transactions on Control of Network Systems*, vol. 4, no. 3, pp. 643-653, 2017.
13. **G. Baggio** and A. Ferrante,  
 “On Minimal Spectral Factors with Zeroes and Poles lying on Prescribed Regions”  
*IEEE Transactions on Automatic Control*, vol. 61, no. 8, pp. 2251-2255, 2016.
14. **G. Baggio** and A. Ferrante,  
 “On the Factorization of Rational Discrete-Time Spectral Densities”,  
*IEEE Transactions on Automatic Control*, vol. 61, no. 4, pp. 969-981, 2016.

#### *Conference Papers*

1. **G. Baggio** and F. Pasqualetti,  
 “Learning Minimum-Energy Controls from Heterogeneous Data”,  
*American Control Conference (ACC)*, pp. 3991-3996, Denver, CO, USA, 2020.
2. T. Menara, **G. Baggio**, D. S. Bassett, and F. Pasqualetti  
 “A Framework to Control Functional Connectivity in the Human Brain”,  
*IEEE Conference on Decision and Control (CDC)*, pp. 4697-4704, Nice, France, 2019.
3. **G. Baggio**, S. Zampieri, and C. W. Scherer,  
 “Gramian Optimization with Input-Power Constraints”,  
*IEEE Conference on Decision and Control (CDC)*, pp. 5686-5691, Nice, France, 2019.
4. F. Ticozzi, **G. Baggio**, and L. Viola,  
 “Quantum Information Encoding from Stabilizing Dynamics”  
*IEEE Conference on Decision and Control (CDC)*, pp. 413-418, Nice, France, 2019.

5. **G. Baggio**, V. Katewa, F. Pasqualetti, and S. Zampieri, “The Shannon Capacity of Linear Dynamical Networks”, *European Control Conference (ECC)*, pp. 602-607, Naples, Italy, 2019.
6. T. Menara, **G. Baggio**, D. S. Bassett, and F. Pasqualetti, “Exact and Approximate Stability Conditions for Cluster Synchronization of Kuramoto Oscillators”, *American Control Conference (ACC)*, pp. 205-210, Philadelphia, PA, USA, 2019. (Best Student Paper Award Winner)
7. **G. Baggio**, V. Rutten, G. Hennequin, and S. Zampieri, “Information Transmission in Dynamical Networks: The Normal Network Case” *IEEE Conference on Decision and Control (CDC)*, pp. 2543-2548, Miami, FL, USA, 2018.
8. **G. Baggio** and S. Zampieri, “On the Relation between Non-normality and Diameter in Linear Dynamical Networks”, *European Control Conference (ECC)*, pp. 1839-1844, Limassol, Cyprus, 2018. (Best Student Paper Award Winner)
9. G. Michieletto, S. Milani, A. Cenedese, and **G. Baggio**, “Improving Consensus-based Distributed Camera Calibration via Edge Pruning and Graph Traversal Initialization”, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 3166-3170, Calgary, Canada, 2018.
10. **G. Baggio** and R. Sepulchre, “LTI Stochastic Processes: a Behavioral Perspective”, *Proceedings of 20th IFAC World Congress*, pp. 2806-2811, Toulouse, France, 2017.
11. **G. Baggio**, “On the Convergence of a Matricial Fixed-Point Iteration Connected with Spectral Estimation”, *Proceedings of 20th IFAC World Congress*, pp. 7415-7420, Toulouse, France, 2017.
12. **G. Baggio**, F. Ticozzi, and L. Viola, “Quantum State Preparation by Controlled Dissipation in Finite Time: From Classical to Quantum Controllers”, *IEEE Conference on Decision and Control (CDC)*, pp. 1072-1077, Maui, HI, USA, 2012.

#### PROFESSIONAL ACTIVITIES

##### *Peer Review activity*

International journals: IEEE Transactions on Automatic Control ◦ Automatica ◦ Control Systems Letters ◦ Systems and Control Letters ◦ IEEE Transactions on Control of Network Systems ◦ IEEE Transactions on Control Systems Technology ◦ IEEE Transactions on Network Science and Engineering ◦ European Journal of Control ◦ IEEE Access.

International conferences: IEEE Control and Decision Conference (CDC) ◦ IEEE American Control Conference (ACC) ◦ European Control Conference (ECC) ◦ IFAC World Congress ◦ IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys) ◦ Indian Control Conference (ICC).

##### *Editorial Activity*

Complex Networks 2020 (9th International Conference on Complex Networks & Their Applica-

tions), Member of the Program Committee

Complex Networks 2021 (10th International Conference on Complex Networks & Their Applications), Member of the Program Committee

European Control Conference (ECC) 2021, Associate Editor

*Session Chair/Organizer*

IEEE CDC 2019, Chair of the session “Control of Networks II”

*Professional Affiliations*

IEEE, Member

2019–Present

IEEE Control System Society (CSS), Member

2019–Present

SIAM, Member

2021–Present