Weichao LIANG

Nationality: *Chinese*
Birth-date: *05/Jan./1993*
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Research interests

Open quantum system, Quantum control, Stochastic control, Nonlinear control

Employment and Education

Jan.2020– Dec.2020	**Postdoc.** *Department of Mathematics, Université de Cergy-Pontoise.*	**Cergy, France**,

- Subject: Structural properties of non-equilibrium steady states in statistical mechanics
- Advisors: Vojkan Jakšić, Armen Shirikyan.

Nov.2019– Dec.2019	**Postdoc.** *Laboratoire des Signaux et Systèmes, CentraleSupèlec.*	**Gif-sur-Yvette, France**,

- Subject: Stabilization of open quantum systems with unknown initial states
- Advisors: Paolo Mason, Nina Amini.

Oct.2016– Oct.2019	**Ph.D.** *Laboratoire des Signaux et Systèmes, Université Paris-Sud/Université Paris-Saclay.*	**Orsay, France**,

- Subject: Feedback exponential stabilization of open quantum systems undergoing continuous-time measurements
- Advisors: Paolo Mason, Nina Amini.
- Jury: Pierre Rouchon (chairman), Michel Bauer, Ugo Boscain, Jean-Michel Coron, John Gough, Hideo Mabuchi, Clement Pellegrini, Nina Amini, Paolo Mason.

Sep.2013– Jun.2016	**Magistère** *Université Paris-Sud (Electronic, Electric, Energy and Automatics).*	**Orsay, France**,
Sep.2014– Jun.2016	**Master of research** *Université Paris-Sud/CentraleSupélec (Automatic, Signal and Image Processing).*	**Orsay, France**,
Sep.2013– Jun.2014	**Bachelor** *Université Paris-Sud (Electronic, Electric, Energy and Automatics).*	**Orsay, France**,
Sep.2010– Jun.2014	**Bachelor** *XiDian University (Telecommunication).*	**XiAn, China**,

Master Internships

Mar.2016– Sep.2016	**Non-linear control tools for the stabilization of open quantum systems** *Laboratoire des signaux et systèmes.*	**Orsay, France**,

- Advisors: Paolo Mason, Nina Amini.

Publications

Journal papers

W. Liang, N. H. Amini and P. Mason, "*Robust feedback stabilization of N-level quantum spin systems*", submitted to SIAM Journal on Control and Optimization (preprint is available upon request).

W. Liang, N. H. Amini and P. Mason, "*On exponential stabilization of N-qubit systems*", submitted to IEEE Transactions on Automatic Control (preprint is available upon request).

W. Liang, N. H. Amini and P. Mason, "*On exponential stabilization of N-level quantum angular momentum systems*", SIAM Journal on Control and Optimization, 2019, 57(6):3939-3960.

Papers in conference proceedings

W. Liang, N. H. Amini and P. Mason, "*On robustness of the quantum filter of spin-$\frac{1}{2}$ systems*", to appear in the 59th IEEE Conference on Decision and Control (CDC 2020), Jeju Island, Republic of Korea, 2020

W. Liang, N. H. Amini and P. Mason, "*Exponential stabilization of N-level quantum angular momentum systems with known and unknown initial states*", to appear in the 24th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2020), Cambridge, UK, 2020.

W. Liang, N. H. Amini and P. Mason, "*On estimation and feedback control of spin-$\frac{1}{2}$ systems with unknown initial states*", to appear in the 21st IFAC World Congress, Berlin, Germany, 2020.

W. Liang, N. H. Amini and P. Mason, "*On exponential stabilization of two-qubit systems*", the 58th IEEE Conference on Decision and Control (CDC 2019), Nice, France, 2019, pp. 2304-2309.

W. Liang, N. H. Amini and P. Mason, "*On exponential stabilization of spin-$\frac{1}{2}$ systems*", the 57th IEEE Conference on Decision and Control (CDC 2018), Miami, USA, 2018, pp. 6602–6607.

Presentations and invited talks

Dec.2019 "*On exponential stabilization of two-qubit systems*", the 58th IEEE Conference on Decision and Control (CDC 2019), Nice, France.

Apr.2019 "*On exponential stabilization of open quantum systems*", the ICODE Seminar, Gif-sur-Yvette, France.

Dec.2018 "*On exponential stabilization of spin-$\frac{1}{2}$ systems*", the 57th IEEE Conference on Decision and Control (CDC 2018), Miami, USA.

Jun.2018 "*On exponential stabilization of N-level quantum angular momentum systems*", poster on the 12th international workshop on Principles and Applications for Control of Quantum Systems (PRACQSYS 2018), Paris, France.

Teaching activities

2018–2019 **Université Paris-Sud** **Orasy, France**,
Teaching assistant (graduate courses).
○ Control process, 28h.
○ Information processing and source coding, 12h.
○ Analysis and control of multivariable linear systems, 24h.

2017–2018 **Université Paris-Sud** **Orasy, France**,
Teaching assistant (graduate courses).
○ Control process, 28h.
○ Signal processing, 7.5h.
○ Information processing and source coding, 12h.
○ System identification and control, algorithm design, 14h.

Programming skills

Programming languages: C/C++, Python, VHDL, Arduino

Scientific softwares: Matlab, Simulink, Mathematica, LaTeX

Languages

Chinese: Native speaker

English: Fluent

French: Fluent

Hobbies and interests

Basketball, Bouldering (Climbing), Running