Jean-Baptiste Bouvier

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Current Position

University of California Berkeley, Berkeley, CA, USA
Postdoctoral Scholar, Department of Mechanical Engineering — **2024**

Previous Positions

University of Illinois Urbana-Champaign, Urbana, IL, USA
Postdoctoral Researcher, Department of Aerospace Engineering — **2023**

University of Illinois Urbana-Champaign, Urbana, IL, USA
Research Assistant, Department of Aerospace Engineering — **2019 – 2023**

PNNL (Pacific Northwest National Laboratory), Richland, WA, USA
PhD Intern in the Optimization & Control group, Optimization of resilient grid — **2021**

CNES (French space agency), Toulouse, France
Intern in Flight Dynamics, Mission design of a satellite constellation — **2019**

University of Illinois Urbana-Champaign, Urbana, IL, USA
Research Assistant, Department of Aerospace Engineering — **2017 – 2018**

Education

University of Illinois Urbana-Champaign, Urbana, IL, USA
Ph.D., Aerospace Engineering — **2019 – 2023**
Thesis: *Guaranteed Resilience of Autonomous Systems to Partial Loss of Control Authority over their Actuators*
Advisor: Prof. Melkior Ornik

M.Sc., Aerospace Engineering — **2017 – 2018**
Thesis: *Orbit Control for a Spacecraft around a Splitting Contact Binary Asteroid*
Advisor: Prof. Koki Ho

ISAE Supaéro, Toulouse, France — **2015 – 2017**
M.Sc., Aerospace Engineering

Lycée du Parc, Lyon, France — **2013 – 2015**
Preparatory Classes in Mathematics, Physics and Engineering

Journal Publications

[1] **JB. Bouvier**, SP. Nandanoori, M. Ornik. Losing control of your network? Try resilience theory. *Submitted to IEEE Transactions on Control of Network Systems*.

[2] **JB. Bouvier**, H. Panag, R. Woollands, M. Ornik. Resilient trajectory tracking to partial loss of control authority over actuators with actuation delay. *Submitted to Journal of Guidance, Control, and Dynamics*.

[3] **JB. Bouvier**, K. Xu, M. Ornik. Quantitative resilience of generalized integrators. *IEEE Transactions on Automatic Control*, 68 (12), pp. 7591–7600, 2023.

[4] **JB. Bouvier**, M. Ornik. Resilience of linear systems to partial loss of control authority. *Automatica*, 152, pp. 110985, 2023.

[5] **JB. Bouvier**, M. Ornik. Designing resilient linear systems. *IEEE Transactions on Automatic Control*, 67 (9), pp. 4832–4837, 2022.

[6] **JB. Bouvier**, M. Ornik. The maximax minimax quotient theorem. *Journal of Optimization Theory and Applications*, 192, pp. 1084–1101, 2022.

[7] TM. Silva, **JB. Bouvier**, K. Xu, M. Hirabayashi, K. Ho. Spacecraft trajectory tracking and parameter estimation around a splitting contact binary asteroid. *Acta Astronautica*, 171, pp. 280–289, 2020.

[8] BB. Jagannatha, **JB. Bouvier**, K. Ho. Preliminary design of low-energy, low-thrust transfers to halo orbits using feedback control. *Journal of Guidance, Control and Dynamics*, 42 (2), pp. 260–271, 2019.

PEER-REVIEWED CONFERENCE PUBLICATIONS

[9] M. Ornik, **JB. Bouvier**. Assured system-level resilience for guaranteed disaster response. 8^{th} *IEEE International Smart Cities Conference*, 2022.

[10] **JB. Bouvier**, M. Ornik. Quantitative resilience of linear systems. 20^{th} *European Control Conference*, pp. 485–490, 2022.

[11] **JB. Bouvier**, SP. Nandanoori, M. Ornik, S. Kundu. Distributed transient safety verification via robust control invariant sets: a microgrid application. *2022 American Control Conference*, pp. 2202–2207, 2022.

[12] **JB. Bouvier**, K. Xu, M. Ornik. Quantitative resilience of linear driftless systems. *SIAM Conference on Control and its Applications*, pp. 32–39, 2021.

[13] **JB. Bouvier**, M. Ornik. Resilient reachability for linear systems. 21^{st} *IFAC World Congress*, pp. 4409–4414, 2020.

OTHER PUBLICATIONS

[14] **JB. Bouvier**, H. Panag, R. Woollands, M. Ornik. Resilience of orbital inspections to partial loss of control authority of the chaser satellite. *2022 AAS/AIAA Astrodynamics Specialist Conference*.

[15] **JB. Bouvier**, W. Zanga (supervised by S. Lizy-Destrez and B. Le Bihan). Strategies for space rendezvous on Lunar Distant Retrograde Orbits. *ISAE Supaéro*, 2017.

TEACHING EXPERIENCE

University of Illinois Urbana-Champaign

AE 461: Structures and Control Lab	**Spring 2022, Spring 2023**
AE 352: Aerospace Dynamical Systems	**Fall 2019**
AE 483: UAV Navigation and Control	**Fall 2018**
Illinois Aerospace Institute Summer Camp	**Summer 2018**

RECENT HONORS

Mavis Future Faculty Fellowship	**2022-2023**
John V. Breakwell Student Award by the American Astronautical Society	**Summer 2022**
Student Travel Award to the 2022 American Control Conference	**Summer 2022**
EUCA Student Support Program for the 2022 European Control Conference	**Summer 2022**
PNNL Outstanding Performance Award	**Fall 2021**
Student Travel Award to the SIAM Conference CT21	**Summer 2021**
Aerospace Outstanding Graduate Student Fellowship	**Spring 2020**

REVIEWER

MDPI Mathematics (2024), International Symposium on Multi-Robot and Multi-Agent Systems (2023), IEEE Conference on Decision and Control (2023), IEEE Transactions on Control Systems Technology (2023), American Control Conference (2023, 2024), IFAC World Congress (2020)

MENTORING

Mentoring Matters at Illinois (2-day workshop)	**2023**
Mentoring of two PhD students	**2023**