Jean-Baptiste Bouvier

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CURRENT POSITION

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

PREVIOUS POSITIONS

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*, 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**

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

IEEE Conference on Decision and Control	**2023**
IEEE Transactions on Control Systems Technology	**2023**
American Control Conference	**2023**
IFAC World Congress	**2020**

MENTORING

Mentoring Matters @ Illinois: 2 day workshop	**2023**