# Jean-Baptiste Bouvier

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LinkedIn
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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 Research Associate, 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**, 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*.

[2] **JB. Bouvier**, SP. Nandanoori, M. Ornik. Losing control of your linear network? Try resilience theory. *IEEE Transactions on Control of Network Systems*, 2024.

[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] **JB. Bouvier**, K. Nagpal, N. Mehr. Learning to Provably Satisfy High Relative Degree Constraints for Black-Box Systems. *submitted to CDC*, 2024.

[10] **JB. Bouvier**, K. Nagpal, N. Mehr. POLICEd RL: Learning Closed-Loop Robot Control Policies with Provable Satisfaction of Hard Constraints. *Robotics: Science and Systems (RSS)*, 2024.

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

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

[13] **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.

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

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

## OTHER PUBLICATIONS

[16] **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*.

[17] **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

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| 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** |

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| REVIEWER | IEEE Open Journal of Control Systems (2024), MDPI Mathematics (2024), International Symposium on Multi-Robot and Multi-Agent Systems (2023), IEEE Conference on Decision and Control (2023, 2024), IEEE Transactions on Control Systems Technology (2023), American Control Conference (2023, 2024), IFAC World Congress (2020) | |
| STUDENT MENTORING | Jordan Kam, undergraduate student, University of California Berkeley (UCB) | **2024** |
| | Kartik Nagpal, PhD student, University of Illinois Urbana-Champaign (UIUC), UCB | **2023-2024** |
| | Kanghyun Ryu, PhD student, UIUC, UCB | **2023-2024** |
| | Mentoring Matters at Illinois (2 days workshop) | **2023** |
| | Kathleen Xu, undergraduate student, UIUC | **2019-2020** |
| | Isabel Anderson, undergraduate student, UIUC | **2018** |