

Kenza K. Boudad

PHD CANDIDATE · PURDUE 2021-22 BILSLAND DISSERTATION FELLOW

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Education

Purdue University

West Lafayette, IN

PHD IN ASTRODYNAMICS AND SPACE APPLICATIONS

Jan. 2019 - May 2022

- **Advisor:** Professor Kathleen C. Howell
- **Major Area:** Astrodynamics and Space Applications • **Minor Area:** Autonomy and Control
- **Dissertation:** Trajectory Design between Cislunar Space and Sun-Earth Libration Points in a Four-Body Model

GPA: 3.78

MASTER OF SCIENCE IN ASTRODYNAMICS AND SPACE APPLICATIONS

Aug. 2016 - Dec. 2018

- **Advisor:** Professor Kathleen C. Howell
- **Major Area:** Astrodynamics and Space Applications • **Minor Area:** Dynamics and Control
- **Thesis:** Disposal Dynamics from the Vicinity of Near Rectilinear Halo Orbits in the Earth-Moon-Sun System ([link to PDF](#))

GPA: 3.67

E.S.T.A.C.A.

Saint-Quentin-en-Yvelines, France

MASTER/BACHELOR OF ENGINEERING

Sep. 2012 - Dec. 2017

- **Major:** Aerospace Engineering • **Minor:** Mechanical Engineering

Work Experience

Purdue University

West Lafayette, IN

BILSLAND DISSERTATION FELLOW

May 2021 - May 2022

- Awarded by the Dean of the Graduate School to outstanding PhD candidates in the final year of doctoral degree completion

MULTI-BODY DYNAMICS RESEARCH ASSISTANT

Aug. 2018 - May 2022

- Investigated cislunar dynamics within the context of a Sun-Earth-Moon 4-body model
- Reported to governmental and industrial partners
- Developed Java and Matlab code for research group astrodynamics software

MATLAB INSTRUCTOR FOR THE MINORITY ENGINEERING PROGRAM

May 2018 - Aug. 2018

- Developed syllabus for a five-week Academic Boot Camp course
- Prepared class sessions and assignments
- Contributed to curriculum development by planning, developing, and evaluating courses with the instructional team

TEACHING ASSISTANT

Jan. 2018 - May 2018

- Instructed two sections of AAE 364L Controls Lab
- Prepared the lab and graded reports

National Space Centre Ltd.

Middleton, Ireland

JUNIOR ENGINEER

Apr. 2016 - Aug. 2016

- Researched on-site capabilities for implementation of prospective satellite dishes
- Developed two Java-based GUIs for on-site operations

ENGINEERING INTERN

May 2015 - Aug. 2015

- Developed a ticket raising system for satellites communications issues for the Irish Navy

Skills and Activities

Programming Matlab (expert), C++ (intermediate), Java (intermediate)

Others Microsoft Office Suite, Git, \LaTeX

Languages French (native), English (fluent), German (beginner)

Peer-Reviewing Reviewed for Celestial Mechanics and Dynamical Astronomy and IEEE Transactions on Aerospace and Electronic Systems

Journal Article

Dynamics of Synodic Resonant Near Rectilinear Halo Orbits in the Bicircular Four-Body Problem

BOUDAD, K. K., HOWELL, K. C., AND DAVIS, D. C.,

- Advances in Space Research
- Volume 66, Issue 9, 1 November 2020, pages 2194-2214
- <https://doi.org/10.1016/j.asr.2020.07.044>

Select Conference Articles

Round-Trip Trajectories Between Earth-Moon NRHOs and Heliocentric Space in the Earth-Moon-Sun System

Dubai, United Arab Emirates

BOUDAD, K. K., HOWELL, K. C., AND DAVIS, D. C.

Oct. 2021

- 72nd International Astronautical Congress
- [Link to PDF](#)

Energy and Phasing Considerations for Low-Energy Transfers from Cislunar to Heliocentric Space

Charlotte, North Carolina (Virtual)

BOUDAD, K. K., HOWELL, K. C., AND DAVIS, D. C.

Feb. 2021

- 31st AAS/AIAA Spaceflight Mechanics Meeting
- [Link to PDF](#)

Heliocentric Access from Cislunar Space within the Context of the Bicircular Restricted Four-Body Problem

Lake Tahoe, California (Virtual)

BOUDAD, K. K., HOWELL, K. C., AND DAVIS, D. C.

Aug. 2020

- AAS/AIAA Astrodynamics Specialist Conference
- [Link to PDF](#)

Heliocentric Escape and Lunar Impact From Near Rectilinear Halo Orbits

Portland, Maine

DAVIS, D. C., BOUDAD, K. K., POWER, R. J., AND HOWELL, K. C.

Aug. 2019

- AAS/AIAA Astrodynamics Specialist Conference
- [Link to PDF](#)

Near Rectilinear Halo Orbits in Cislunar Space within the Context of the Bicircular Four-Body Problem

Moscow, Russia

BOUDAD, K. K., HOWELL, K. C., AND DAVIS, D. C.

Jun. 2019

- 2nd IAA/AAS SciTech Forum
- [Link to PDF](#)

Disposal Trajectories From Near Rectilinear Halo Orbits

Snowbird, Utah

BOUDAD, K. K., DAVIS, D. C., AND HOWELL, K. C.

Aug. 2018

- AAS/AIAA Astrodynamics Specialist Conference
- [Link to PDF](#)

Invited Talk

Low-Energy Transfers from Cislunar to Heliocentric Space to Support Sun-Earth L1 and L2 Space Telescopes and Observatories

Iasi, Romania (Virtual)

HOWELL, K.C., BOUDAD, K.K., AND DAVIS, D.C.

Oct. 2021

- IAU Symposium: Multi-Scale (Time and Mass) Dynamics of Space Objects
- Invited speaker: Prof. Kathleen C. Howell

Relevant Coursework

Astrodynamics	Multi-body Orbital Dynamics, Keplerian Orbital Dynamics, Attitude Dynamics
Control	Linear and Nonlinear Control Theory
Math	Nonlinear Systems, Numerical Methods, Dynamical Systems Theory, Statistics
Other	Multidisciplinary Design Optimization