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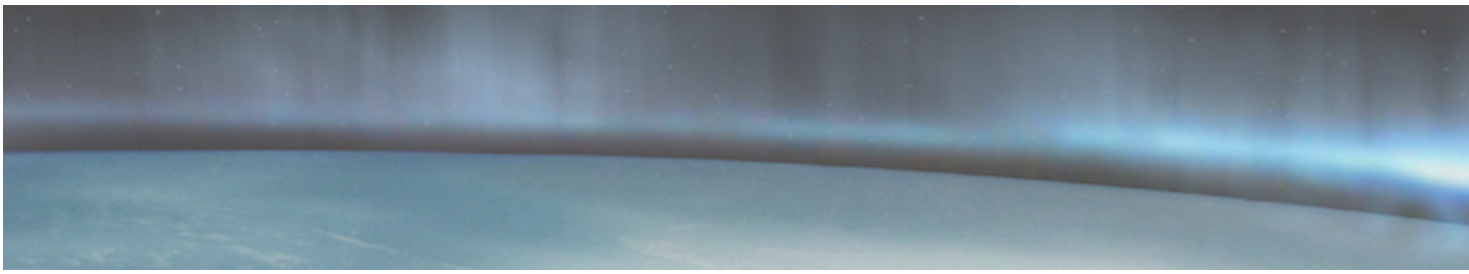
Control of Nonlinear Spacecraft Attitude Motion [1]



About This Course

This course trains you in the skills needed to program specific orientation and achieve precise aiming goals for spacecraft moving through three dimensional space. First, we cover stability definitions of nonlinear dynamical systems, covering the difference between local and global stability. We then analyze and apply Lyapunov's Direct Method to prove these stability properties, and develop a nonlinear 3-axis attitude pointing control law using Lyapunov theory. Finally, we look at alternate feedback control laws and closed loop dynamics.

After this course, you will be able to...

- Differentiate between a range of nonlinear stability concepts
- Apply Lyapunov’s direct method to argue stability and convergence on a range of dynamical systems
- Develop rate and attitude error measures for a 3-axis attitude control using Lyapunov theory
- Analyze rigid body control convergence with unmodeled torque

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Language
English

How to Pass
Pass all graded assignments to complete the course.

User Ratings
Average User Rating 5.0

Level
Advanced

Commitment?
Best completed in 4 weeks, with a commitment of between 2 and 5 hours per week.

Who is this class for:

This class is for working engineering professionals looking to add to their skill sets, graduate students in engineering looking to fill gaps in their knowledge base, and enterprising engineering undergraduates looking to expand their horizons.

For More Information or to Enroll [2]

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Created by:

University of Colorado Boulder

Groups audience:

Colorado Learning and Teaching with Technology
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MOOC Control of Nonlinear Spacecraft Attitude Motion

Source URL:https://www.cu.edu/coltt/control-nonlinear-spacecraft-attitude-motion

Links
[1] https://www.cu.edu/coltt/control-nonlinear-spacecraft-attitude-motion
[2] https://www.coursera.org/learn/nonlinear-spacecraft-attitude-control