

$$\dot{x} = f(x, u), \quad x(0) = x_0$$

$$y = g(x, u)$$

$$s\mathcal{X}(s) = (\mathcal{A} - \mathcal{N})\mathcal{X}(s) + \mathcal{L}u(s)$$

$$\mathcal{Y}(s) = \mathcal{C}\mathcal{X}(s) + \mathcal{D}u(s)$$

$$\dot{\Phi}(t, t_0) = \mathbf{A}(t) \Phi(t, t_0)$$

Zonotope Based Steering Laws for Agile Spacecraft with Control Moment Gyros

Dipl.-Ing. Ramin Geshnizjani



$$\|y\|_{rms}^2 \leq \sup_{\omega \in \Re} |G(j\omega)|^2 \frac{1}{2\pi} \int_{-\infty}^{\infty} S_{uu}(\omega) d\omega$$

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A thesis accepted by the Faculty of Aerospace Engineering and Geodesy of the
University of Stuttgart in partial fulfilment of the requirements for the degree of
Doctor of Engineering Sciences (Dr.-Ing.)

by

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	Technische Universität Dresden

Date of defence: 15 October 2021

**Institute of Flight Mechanics and Controls
University of Stuttgart**

2021

Fortschrittsberichte des Instituts für Flugmechanik und
Flugregelung

Band 13

Ramin Tobias Geshnizjani

**Zonotope Based Steering Laws for Agile Spacecraft
with Control Moment Gyros**

D 93 (Diss. Universität Stuttgart)

Shaker Verlag
Düren 2022

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.d-nb.de>.

Zugl.: Stuttgart, Univ., Diss., 2021

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Printed in Germany.

ISBN 978-3-8440-8404-7

ISSN 2199-3483

Shaker Verlag GmbH • Am Langen Graben 15a • 52353 Düren

Phone: 0049/2421/99011-0 • Telefax: 0049/2421/99011-9

Internet: www.shaker.de • e-mail: info@shaker.de

Acknowledgements

This thesis would not exist if it had not been for the support of many people.

First of all, I would like to thank Professor Fichter for giving me the opportunity to work on this interesting topic, his targeted feedback at the relevant milestones (always hitting the technical nerve), and especially for his support in the final legs. I want to thank Professor Janschek for his interest in and quick grasp of my work as well as his willingness to act as co-referee.

The Institute of Flight Mechanics and Controls (iFR) is a remarkable group of competent and motivated scientists and, most importantly, a great team. Thank you to absolutely everyone for the fruitful discussions (I will never forget the after hours discussion in the coffee kitchen that pointed me in the right direction for showing the connectedness in Chapter 4), the friendly/competitive runs around the Bärenseen, the alpine hikes and taxing skiing trips (how I made it down that last slope is still beyond me), the legendary Christmas parties, and many more cherished memories over the last years.

My second “professional home” was the AOCS team of Airbus Defence and Space in Friedrichshafen. Here, I want to thank in particular Andrey Kornienko (now at ESA-ESTEC) for his continuous support, his mentorship, and many helpful discussions (both in the office and while commissioning the INTREPID testbed) and Thomas Ott, who supported me in various roles throughout the last ten years. I also want to thank Johannes Löhr for introducing me to zonotopes and Tobias Ziegler for providing me with practical problems to solve as agilely as possible, Jens Levenhagen for always making me feel part of the team (and for the mug, of course!) as well as Jochen Rieber and Simon Görries for the smooth cooperation in the HOREOS projects.

Last, but not least, I want to thank my family including Lisa (usually the first to participate in the ups and downs) for always supporting me and motivating (or teasing) me to keep moving forward with this work.

Contents

Acknowledgements	iii
Kurzfassung	ix
Abstract	xi
Nomenclature	xiii
1 Introduction	1
1.1 CMGs for Attitude Control of Agile Spacecraft	1
1.2 Challenges of CMG Based Attitude Control Systems	3
1.3 Solution Approaches and State of the Art	5
1.3.1 Attitude Control Laws	5
1.3.2 CMG Array Architectures	6
1.3.3 CMG Steering Laws	7
1.4 Problem Statement and Objective of the Work	10
1.5 Research Contributions	11
2 Basic Dynamics and Steering of CMG Arrays	13
2.1 Spacecraft Rotational Dynamics	13
2.2 CMG Dynamics	14
2.2.1 Basic Dynamics	14
2.2.2 Four-CMG Roof Array	16
2.2.3 Torque Envelope	18
2.3 Steering Laws	20
2.3.1 Torque Steering	20
2.3.2 Angular Momentum Steering	22
3 Preferred Initial Gimbal Angles for Agile Slew Maneuvers	25
3.1 Overview	25
3.2 Anatomy of Agile Slew Maneuvers	26

3.3	Computation of Preferred Gimbal Angles	28
3.3.1	Definition of Preferred Gimbal Angles	28
3.3.2	Scalar Optimization Program for Four-CMG Roof Array	29
3.3.3	Zero-Momentum Solution	32
4	Null Space Steering Law	37
4.1	Overview	37
4.2	Connectedness of Null Space	38
4.3	Proposed Null Space Steering Law	40
4.3.1	Projection of Angular Distance	40
4.3.2	Proposed Steering Law Based on Angular Momentum Allocation	41
4.4	Simulation Results	43
4.4.1	Simple Slew Maneuvers	43
4.4.2	Agile Earth Observation Scenario	49
5	Angular Momentum Domain Steering Law for Roof Arrays	55
5.1	Preliminaries and Steering Objective	55
5.2	Explicit Formulations of Torque Capacity	57
5.3	Identification of Manifold Segment	59
5.4	Optimization of Torque Capacity	61
5.4.1	General Remarks	61
5.4.2	Quadratic Approximation of Torque Capacity	62
5.4.3	Computation of Commanded Gimbal Angles	63
5.5	Summary of Steering Logic	66
6	Angular Momentum Domain Attitude Control	69
6.1	Overview	69
6.2	Design Plant and Proportional Control Law	70
6.3	Determination of Maximum Proportional Gain	71
6.4	Stability Analysis	76
6.5	Simulation Results	79
6.5.1	Setup and Scenarios	79
6.5.2	Results and Discussion	83
7	Conclusions	91
7.1	Summary and Conclusions	91
7.2	Outlook and Future Work	92

Bibliography	95
A Mathematical Background	103
A.1 Solution of Third-Order Polynomial	103
A.2 Norms	104
B Explicit Formulations	107
B.1 Entry Point Candidates of Iso-Momentum Manifold	107
Resume	111