

Cable-Driven Parallel Robots

Bearbeitet von
Tobias Bruckmann, Andreas Pott

1. Auflage 2012. Buch. xiv, 454 S. Hardcover
ISBN 978 3 642 31987 7
Format (B x L): 15,5 x 23,5 cm
Gewicht: 859 g

[Weitere Fachgebiete > Technik > Elektronik > Robotik](#)

Zu [Leseprobe](#)

schnell und portofrei erhältlich bei


DIE FACHBUCHHANDLUNG

Die Online-Fachbuchhandlung beck-shop.de ist spezialisiert auf Fachbücher, insbesondere Recht, Steuern und Wirtschaft. Im Sortiment finden Sie alle Medien (Bücher, Zeitschriften, CDs, eBooks, etc.) aller Verlage. Ergänzt wird das Programm durch Services wie Neuerscheinungsdienst oder Zusammenstellungen von Büchern zu Sonderpreisen. Der Shop führt mehr als 8 Millionen Produkte.

Contents

Part I Motion Planning

Global Planning of Dynamically Feasible Trajectories for Three-DOF Spatial Cable-Suspended Parallel Robots	3
Clément Gosselin	
Experimental Validation of a Trajectory Planning Approach Avoiding Cable Slackness and Excessive Tension in Underconstrained Translational Planar Cable-Driven Robots	23
Alberto Trevisani	
Time-Energy Optimal Trajectory Planning of Cable-Suspended Manipulators	41
Mahdi Bamdad	
Navigating the Wrench-Feasible C-Space of Cable-Driven Hexapods . . .	53
Oriol Bohigas, Montserrat Manubens and Lluís Ros	

Part II Force Distribution

A Tension Distribution Method with Improved Computational Efficiency	71
Johann Lamaury and Marc Gouttefarde	
Optimal Force Distribution Based on Slack Rope Model in the Incompletely Constrained Cable-Driven Parallel Mechanism of FAST Telescope	87
Hui Li, Xinyu Zhang, Rui Yao, Jinghai Sun, Gaofeng Pan and Wenbai Zhu	

Investigation of the Influence of Elastic Cables on the Force Distribution of a Parallel Cable-Driven Robot	103
Werner Kraus, Philipp Miermeister and Andreas Pott	
 Part III Application and Prototypes	
IPAnema: A family of Cable-Driven Parallel Robots for Industrial Applications.	119
Andreas Pott, Hendrick Mütterich, Werner Kraus, Valentine Schmidt, Philipp Miermeister and Alexander Verl	
A Reconfigurable Robot for Cable-Driven Parallel Robotic Research and Industrial Scenario Proofing	135
Jean-Baptiste Izard, Marc Gouttefarde, Micaël Michelin, Olivier Tempier and Cedric Baradat	
Integration of a Parallel Cable-Driven Robot on an Existing Building Façade	149
Jean-Baptiste Izard, Marc Gouttefarde, Cedric Baradat, David Culla and Damien Sallé	
 Part IV Design and Components	
Use of Passively Guided Deflection Units and Energy-Storing Elements to Increase the Application Range of Wire Robots.	167
Joachim von Zitzewitz, Lisa Fehlberg, Tobias Bruckmann and Heike Vallery	
Use of High Strength Fibre Ropes in Multi-Rope Kinematic Robot Systems.	185
Jens C. Weis, Björn Ernst and Karl-Heinz Wehking	
Workspace Improvement of Two-link Cable-driven Mechanisms with Spring Cable	201
Amir Taghavi, Saeed Behzadipour, Navid Khalilinasab and Hassen Zohoor	
The Constant-Orientation Dimensional Synthesis of Planar Cable-Driven Parallel Mechanisms Through Convex Relaxations	215
Kaveh Azizian and Philippe Cardou	

Part V Kinematics and Interval Methods

Feasible Kinematic Sensitivity in Cable Robots Based on Interval Analysis 233
 Seyed Ahmad Khalilpour, Azadeh Zarif Loloeei, Hamid D. Taghirad and Mehdi Tale Masouleh

Solving the Direct Geometrico-Static Problem of 3-3 Cable-Driven Parallel Robots by Interval Analysis: Preliminary Results 251
 Alessandro Berti, Jean-Pierre Merlet and Marco Carricato

Direct Geometrico-Static Analysis of Under-Constrained Cable-Driven Parallel Robots with 4 Cables 269
 Marco Carricato and Ghasem Abbasnejad

Implementing Extended Kinematics of a Cable-Driven Parallel Robot in Real-Time 287
 Valentin Schmidt and Andreas Pott

Part VI Calibration and Identification

An Identification Methodology for 6-DoF Cable-Driven Parallel Robots Parameters Application to the INCA 6D Robot. 301
 Ryad Chellal, Edouard Laroche, Loïc Cuvillon and Jacques Gangloff

Differential Kinematics for Calibration, System Investigation, and Force Based Forward Kinematics of Cable-Driven Parallel Robots . . . 319
 Philipp Miermeister, Werner Kraus and Andreas Pott

Part VII Control

Experimental Performance of Robust PID Controller on a Planar Cable Robot 337
 Mohammad A. Khosravi and Hamid D. Taghirad

A Preliminary Study for H_{∞} Control of Parallel Cable-Driven Manipulators 353
 Edouard Laroche, Ryad Chellal, Loïc Cuvillon and Jacques Gangloff

Trajectory Tracking for a Three-Cable Suspension Manipulator by Nonlinear Feedforward and Linear Feedback Control 371
 Christoph Woernle

Part VIII Dynamics Modeling

**Geometric Stiffness Analysis of Wire Robots:
A Mechanical Approach 389**
Dragoljub Surdilovic, Jelena Radojicic and Jörg Krüger

**Stiffness Analysis of a Planar 2-DoF Cable-Suspended Mechanism
While Considering Cable Mass 405**
Marc Arsenault

**A Modeling Method of the Cable Driven Parallel Manipulator
for FAST 423**
Rui Yao, Hui Li and Xinyu Zhang

**Cable Vibration Analysis for Large Workspace Cable-Driven
Parallel Manipulators 437**
Jingli Du, Wen Ding and Hong Bao

Author Index 451