1.

Record Nr.	UNINA990004125010403321
Autore	Allison, Henry E.
Titolo	The Kant-Eberhard Controversy / Henry E. Allison
Pubbl/distr/stampa	London : The Johns Hopkins UniversityPress, c1973
Descrizione fisica	XII, 194 p. ; 24 cm
Disciplina	193
Locazione	FLFBC
Collocazione	P.1 7D KANT/S 7
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Sul front.: An English traslation together with supplementary materials and a historical-analytic introduction of Immanuel Kant's on a Discovery According to which Any New Critique of Pure Reason Has Been Made Superfluous by Earlier One.

2. Record Nr. UNINA9910299825303321

Autore	Briot Sébastien
Titolo	Dynamics of Parallel Robots : From Rigid Bodies to Flexible Elements / / by Sébastien Briot, Wisama Khalil
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015
ISBN	3-319-19788-6
Edizione	[1st ed. 2015.]
Descrizione fisica	1 online resource (355 p.)
Collana	Mechanisms and Machine Science, , 2211-0984 ; ; 35
Disciplina	629.892
Soggetti	Vibration Dynamical systems Dynamics Control engineering Robotics Mechatronics Mechanical engineering Vibration, Dynamical Systems, Control Control, Robotics, Mechatronics Mechanical Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Part I Prerequisites -- 1 Generalities on parallel robots -- 1.1 Introduction -- 1.2 General definitions -- 1.3 Types of PKM architectures -- 1.4 Why a book dedicated to the dynamics of parallel robots? -- 2 Homogeneous transformation matrix -- 2.1 Homogeneous coordinates and homogeneous transformation matrix -- 2.2 Elementary transformation matrices -- 2.3 Properties of homogeneous transformation matrices -- 2.4 Parameterization of the general matrices of rotation -- 3 Representation of velocities and forces / acceleration of a body -- 3.1 Definition of a screw -- 3.2 Kinematic screw (or twist) -- 3.3 Representation of forces and moments (wrench) -- 3.4 Condition of reciprocity -- 3.5 Transformation matrix between twists -- 3.6 Transformation matrix between wrenches -- 3.7 Acceleration of a body -- 4 Kinematic

parameterizing of multibody systems -- 4.1 Kinematic pairs and joint variables -- 4.2 Modified Denavit-Hartenberg parameters -- 5 Geometric, velocity and acceleration analysis of open kinematic chains -- 5.1 Geometric analysis of open kinematic chains -- 5.2 Velocity analysis of open kinematic chains -- 5.3 Acceleration analysis of open kinematic chains -- 6 Dynamics principles -- 6.1 The Lagrange formulation -- 6.2 The Newton-Euler equations -- 6.3 The principle of virtual powers -- 6.4 Computation of actuator input efforts under a wrench exerted on the end-effector -- Part II Dynamics of rigid parallel robots -- 7 Kinematics of parallel robots -- 7.1 Inverse geometric model -- 7.2 Forward geometric model -- 7.3 Velocity analysis -- 7.4 Acceleration analysis -- 7.5 Singularity analysis -- 8 Dynamic modeling of parallel robots -- 8.1 Introduction -- 8.2 Dynamics of tree-structure robots -- 8.3 Dynamic model of the free moving platform -- 8.4 Inverse and direct dynamic models of non-redundant parallel robots -- 8.5 Inverse and direct dynamic models of parallel robots with actuation redundancy -- 8.6 Other models -- 8.7 Computation of the base dynamic parameters -- 9 Analysis of the degeneracy conditions for the dynamic model of parallel robots -- 9.1 Introduction -- 9.2 Analysis of the degeneracy conditions of the IDM of PKM -- 9.3 Avoiding infinite input efforts while crossing Type 2 or LPJTS singularities thanks to an optimal trajectory planning -- 9.4 Example 1: the five-bar mechanism crossing a Type 2 singularity -- 9.5 Example 2: the Tripterion crossing a LPJTS singularity -- 9.6 Discussion -- Part III Dynamics of flexible parallel robots -- 10 Elastodynamic modeling of parallel robots -- 10.1 Introduction -- 10.2 Generalized Newton-Euler equations of a flexible link -- 10.2.3 Matrix form of the generalized Newton-Euler model for a flexible clamped-free body -- 10.3 Dynamic model of virtual flexible systems -- 10.4 Dynamic model of a flexible parallel robot -- 10.5 Including the actuator elasticity -- 10.6 Practical implementation of the algorithm -- 10.7 Case Study: the DualEMPS -- 11 Computation of natural frequencies -- 11.1 Introduction -- 11.2 Stiffness and inertia matrices of the virtual system -- 11.3 Stiffness and inertia matrices of the PKM -- 11.4 Including the actuator elasticity -- 11.5 Practical implementation of the algorithm -- 11.6 Case Studies -- 11.7 Conclusion -- Appendices -- A Calculation of the number of degrees of freedom of robots with closed chains -- A.1 Introduction -- A.2 Moroskine’s Method -- A.3 Gogu’s Method -- A.4 Examples -- B Lagrange equations with multipliers -- C Computation of wrenches reciprocal to a system of twists -- C.1 Definitions -- C.2 Condition of reciprocity -- C.3 Computation of wrenches reciprocal to a system of twists constrained in a plane -- C.4 Computation of wrenches reciprocal to other types of twist systems -- D Point-to-point trajectory generation -- E Calculation of the terms facc1 , facc2 and facc3 in Chapter 10 -- E.1 Calculation of the term facc1 -- E.2 Calculation of the term facc2 -- E.3 Calculation of the term facc3 -- F Dynamics equations for a clamped-free flexible beam -- F.1 Shape functions for a free flexible beam -- F.2 Stiffness matrix for a free flexible beam -- F.3 Evaluation of the inertia matrix of a free flexible 3D Bernoulli beam for qe j = 0 -- References -- Index.

Sommario/riassunto

This book starts with a short recapitulation on basic concepts, common to any types of robots (serial, tree structure, parallel, etc.), that are also necessary for computation of the dynamic models of parallel robots. Then, as dynamics requires the use of geometry and kinematics, the general equations of geometric and kinematic models of parallel robots are given. After, it is explained that parallel robot dynamic models can be obtained by decomposing the real robot into two virtual systems: a tree-structure robot (equivalent to the robot legs for which all joints

would be actuated) plus a free body corresponding to the platform. Thus, the dynamics of rigid tree-structure robots is analyzed and algorithms to obtain their dynamic models in the most compact form are given. The dynamic model of the real rigid parallel robot is obtained by closing the loops through the use of the Lagrange multipliers. The problem of the dynamic model degeneracy near singularities is treated and optimal trajectory planning for crossing singularities is proposed. Lastly, the approach is extended to flexible parallel robots and the algorithms for computing their symbolic model in the most compact form are given. All theoretical developments are validated through experiments.