

REFERENCES

- [1] Merlet, J-P. *Parallel Robots*. Dordrecht: Kluwer Academic Publishers, 2000.
- [2] Dasgupta, B. and Mruthyunjaya, T.S. The Stewart Platform Manipulator: a Review. *Mechanism and Machine Theory*, Vol. 35, pp. 15-40, 2000.
- [3] Lin, W., Griffis, M. and Duffy, J. Forward Displacement Analyses of the 4-4 Stewart Platforms. *Transactions of the ASME Journal of Mechanical Design*, Vol. 114, pp.444-450, 1992.
- [4] Gough, V.E. and Whitehall, S.G. Universal Tyre Test Machine. In *Proceedings 9th International Technical Congress F.I.S.I.T.A.*, Vol. 117, pp. 117-137, 1962.
- [5] Stewart, D. A Platform with Six Degrees of Freedom. In *Proceedings of the Institute of Mechanical Engineers Part 1*, Vol. 180, No. 15, pp. 371-386, 1965/66.
- [6] Di Gregorio, R. and Parenti-Castelli, V. Benefits of Twisting the Legs in the 3-UPU Tsai Mechanism. In *Proceedings Year 2000 Parallel Kinematics Machines International Conference, September 13-15, 2000, Ann Arbor, Mi. USA*, [Orlandea, N. et al. (eds.)], pp.201 - 211.
- [7] Hunt, K.H. *Kinematic Geometry of Mechanisms*. Oxford: Clarendon Press, 1978.
- [8] Lewis, G. It's Here – Six Ways at Once. *Engineering News*, No. 234, pp. 1, 1966.
- [9] Pritschow, G. Research and Development in the Field of Parallel Kinematic Systems in Europe. In Boër, C.R., Molinari-Tosatti, L. and Smith, K.S. (eds.) *Parallel Kinematic Machines: Theoretical Aspects and Industrial Requirements*. London: Springer-Verlag, pp.3-15, 1999.
- [10] Boër, C.R., Molinari-Tosatti, L. and Smith, K.S. (eds.) *Parallel Kinematic Machines: Theoretical Aspects and Industrial Requirements*. London: Springer-Verlag, 1999.
- [11] Powell, N.P., Whittingham, B.D. and Gindy, N.N.Z. Parallel Link Mechanism Machine Tools: Acceptance Testing and Performance Analysis. In Boër, C.R., Molinari-Tosatti, L. and Smith, K.S. (eds.) *Parallel Kinematic Machines: Theoretical Aspects and Industrial Requirements*. London: Springer-Verlag, pp.327-344, 1999.
- [12] Wavering, A.J. Parallel Kinematic Machine Research at NIST: Past, Present, and Future. In Boër, C.R., Molinari-Tosatti, L. and Smith, K.S. (eds.) *Parallel Kinematic Machines: Theoretical Aspects and Industrial Requirements*. London: Springer-Verlag, pp.17-31, 1999.
- [13] Gindy et al. The Variax Machining Centre, its Design and Application to a Rapid Response Integrated Manufacturing System. *Technical Report, Department of Mechanical Engineering and Operations Management, University of Nottingham, U.K.*, 1997.

- [14] Ziegert, J.C., Jokieli, B. and Huang, C-C. Calibration and Self-Calibration of Hexapod Machine tools. In Boër, C.R., Molinari-Tosatti, L. and Smith, K.S. (eds.) *Parallel Kinematic Machines: Theoretical Aspects and Industrial Requirements*. London: Springer-Verlag, pp.205-225, 1999.
- [15] Neugebauer, R. et al. Experiences with a Hexapod-Based Machine Tool. In Boër, C.R., Molinari-Tosatti, L. and Smith, K.S. (eds.) *Parallel Kinematic Machines: Theoretical Aspects and Industrial Requirements*. London: Springer-Verlag, pp.313-326, 1999.
- [16] Tönshoff, H.K. and Grendel, H. A Systematic Comparison of Parallel Kinematics. In Boër, C.R., Molinari-Tosatti, L. and Smith, K.S. (eds.) *Parallel Kinematic Machines: Theoretical Aspects and Industrial Requirements*. London: Springer-Verlag, pp.295-312, 1999.
- [17] Orlandea, N. et al. (eds.) *Proceedings Year 2000 Parallel Kinematics Machines International Conference, September 13-15, 2000, Ann Arbor, Mi. USA*.
- [18] Koepfer, C. A New Twist on Five-Axis Machining [Online]. MMS Online, 2001. Available from <http://www.mmsonline.com/articles/1000rt1.html> [Accessed 18 October 2001].
- [19] Gopalakrishnan, V., et al. Parallel Structures and Their Applications in Re-configurable Machining Systems. In *Proceedings Year 2000 Parallel Kinematics Machines International Conference, September 13-15, 2000, Ann Arbor, Mi. USA*, [Orlandea, N. et al. (eds.)], pp.87 - 97.
- [20] Duffy, J. *Statics and Kinematics with Applications to Robotics*. Cambridge University Press, 1996.
- [21] Shirkhodaie, A.H. and Soni, A.H. Forward and Inverse Synthesis for a Robot with Three Degrees of Freedom. In *Proceedings of the Summer Computer Simulation Conference*. Montréal, pp. 851-856, 1987.
- [22] Pennock, G.R. and Kassner, D.J. Kinematic Analysis of a Planar Eight-Bar Linkage: Application to a Platform-Type Robot. *Transactions of the ASME Journal of Mechanical Design*, Vol. 114, pp. 87-95, 1992.
- [23] Peysah, E.E. Determination of the Position of the Member of Three-Joint and Two-Joint Four Member Assur Groups with Rotational Pairs. (in Russian) *Maschinowedenie*, No. 5, pp. 55-61, 1985.
- [24] Wohlhart, K. Direct Kinematic Problem of the Planar Stewart Platform. In *Proceedings of the International Conference on Computer Integrated Manufacturing, Zakopane*, pp. 403-411, 1992.
- [25] Gosselin, C., Sefroui, J. and Richard, M. "Solutions polynomiales au problème de la cinématique directe des manipulateurs parallèles plans à trois degrés de liberté." *Mechanism and Machine Theory*, Vol. 27, pp. 107-119, 1992.

- [26] Gosselin, C. Parallel Computational Algorithms for the Kinematics and Dynamics of Planar and Spatial Parallel Manipulators. *Transactions of the ASME Journal of Dynamic Systems, Measurement and Control*, Vol. 118, pp. 22-28, 1996.
- [27] Sefroui, J. and Gosselin, C. Singularity Analysis and Representation of Planar Parallel Manipulators. *Journal of Robotics and Autonomous Systems*, Vol. 10, pp. 209-224, 1993.
- [28] Gosselin, C. and Angeles, J. The Optimum Kinematic Design of a Planar Three-Degree-of-Freedom Parallel Manipulator. *Transactions of the ASME Journal of Mechanisms, Transmissions and Automation in Design*, Vol. 110, pp. 35-41, 1988.
- [29] Williams, R.L. (II) and Reinholtz, C.F. Closed-form Workspace Determination and Optimization for Parallel Robotic Mechanisms. In *Proceedings of the ASME Mechanisms Conference*, Kissimmee, Vol. 15-3, pp.341-351, 1988.
- [30] Laliberté, T., Gosselin, C. and Jean, M. Static Balancing of 3-DOF Planar Parallel Mechanisms. *IEEE/ASME Transactions on Mechatronics*, Vol. 4, pp. 363-377.
- [31] Satya, S.M., Ferreira, P.M. and Spong, M.W. Hybrid Control of a Planar 3-DOF Parallel Manipulator for Machining Operations. *Technical Report, Department of Mechanical and Industrial Engineering, University of Urbana-Champaign, Illinois USA*, 1995.
- [32] El-Khasawneh, B., Satya, S. and Brunner, R. SMARTCUTS (Simultaneous Machining through Real Time Control of Universal Tooling Systems) [Online]. Available from <http://marshall.me.uiuc.edu/PROJECTS/SCUTS/SMARTCUTS.html> [Accessed 30 January 1998]
- [33] El-Khasawneh, B.S. and Ferreira, P.M. The Tetrahedral Tripod. In Boër, C.R., Molinari-Tosatti, L. and Smith, K.S. (eds.) *Parallel Kinematic Machines: Theoretical Aspects and Industrial Requirements*. London: Springer-Verlag, 1999, pp.419-430.
- [34] El-Khasawneh, B.S. and Ferreira, P.M. On Using Parallel Link Manipulators as Machine Tools. *NAMRC XXV – North American Manufacturing Research Conference; 25th. Transactions of the North American Manufacturing Research Institution of SME, 1997; Conf. 25*, pp. 305-310, 1997.
- [35] El-Khasawneh, B.S. and Ferreira, P.M. Computation of Stiffness and Stiffness Bounds for Parallel Link Manipulators. *International Journal of Machine Tools & Manufacture*, Vol. 39, pp. 321-342, 1999.
- [36] Weck, M. and Giesler, M. Dyna-M Development of Machine-Tools with Parallel Kinematic. *WZL RWTH AACHEN Lehrstuhl für Werkzeugmaschinen*. Available via e-mail from: M.Giesler@wzl.rwth-aachen.de (22 November 2000).

- [37] Moriwaki, T. Survey of R&D Activities Related to Parallel Mechanisms in Japan. In Boër, C.R., Molinari-Tosatti, L. and Smith, K.S. (eds.) *Parallel Kinematic Machines: Theoretical Aspects and Industrial Requirements*. London: Springer-Verlag, 1999, pp.431-440.
- [38] Chrisp, A.G. and Gindy, N.N.Z. Parallel Link Machine Tools: Simulation, Workspace Analysis and Component Positioning. In Boër, C.R., Molinari-Tosatti, L. and Smith, K.S. (eds.) *Parallel Kinematic Machines: Theoretical Aspects and Industrial Requirements*. London: Springer-Verlag, pp. 245-256, 1999.
- [39] Whittingham, B.D. et al. Capabilities of Parallel Link Machine Tools: Preliminary Investigations of the Variax Hexacenter. *Technical Report, Department of Mechanical Engineering and Operations Management, University of Nottingham, U.K.*, 1998.
- [40] Du Plessis, L.J. and Snyman, J.A. A Numerical Method for the Determination of Dextrous Workspaces of Gough-Stewart platforms. *International Journal for Numerical Methods in Engineering*, Vol. 52, pp 345–369, 2001.
- [41] Yan, H-S. and Chen, F-C. Configuration Synthesis of Machining Centers without Tool Change Arms. *Mechanism and Machine Theory*, Vol. 33, pp. 197-212, 1998.
- [42] Koren, Y. Foreword to the *CIRP 1st International Conference on Agile, Re-configurable Manufacturing, May 21-22, 2001, University of Michigan, Ann Arbor, Michigan, USA*.
- [43] Ji, Z. and Leu, M.C. Design, Re-configuration, and Control of Parallel Kinematic Machines. In Boër, C.R., Molinari-Tosatti, L. and Smith, K.S. (eds.) *Parallel Kinematic Machines: Theoretical Aspects and Industrial Requirements*. London: Springer-Verlag, pp.111-129, 1999.
- [44] Ji, Z. and Song, P. Design of a Re-configurable Platform Manipulator. *Journal of Robotic Systems*, Vol. 15, pp. 341-346, 1998.
- [45] Ji, Z. Analysis of Design Parameters in Platform Manipulators. *Transactions of the ASME Journal of Mechanical Design*, Vol. 118, pp. 526-531, 1996.
- [46] Fitzgerald, J.M. and Lewis, F.L. Evaluating the Stewart Platform for Manufacturing. *Robotics Today*, Vol. 6, pp. 1-3, 1993.
- [47] Chedmail, P. Optimization of Multi-DOF Mechanisms. In Angeles, J. and Zakhariiev, E. (eds.) *Computational Methods in Mechanical Systems – Mechanism Analysis, Synthesis, and Optimization*. Berlin: Springer-Verlag, pp.97-129, 1998.
- [48] Kodiyalam, S. and Saxena, M. (eds.) *Geometry and Optimization Techniques for Structural Design*. Billerica: Computational Mechanics Inc. and Essex: Elsevier Science Publishers Ltd., 1994

- [49] Zhang, D and Gosselin, C.M. Kinetostatic Analysis and Optimization of the Tricept Machine Tool Family. In *Proceedings Year 2000 Parallel Kinematics Machines International Conference, September 13-15, 2000, Ann Arbor, Mi. USA*, [Orlandea, N. et al. (eds.)], pp.174 - 188.
- [50] Wang, Z., et al. A Study on Workspace, Boundary Workspace Analysis and Workpiece Positioning for Parallel Machine Tools. *Mechanism and Machine Theory*, Vol. 36, pp. 605-622, 2001.
- [51] Kirchner, J. and Neugebauer, R. How to Optimize Parallel Link Mechanisms – Proposal of a New Strategy. In *Proceedings Year 2000 Parallel Kinematics Machines International Conference, September 13-15, 2000, Ann Arbor, Mi. USA*, [Orlandea, N. et al. (eds.)], pp.307-315.
- [52] Hernández, S. Multiobjective Structural Optimization. In Kodiyalam, S. and Saxena, M., (eds.) *Geometry and Optimization Techniques for Structural Design*. Ashurst: Computational Mechanics Publications / Barking: Elsevier Science Publishers Ltd., pp. 341-362, 1994.
- [53] Merlet, J-P. DEMOCRAT: A Design Methodology for the Conception of Robots with Parallel Architecture. *Robotica*, Vol. 15, pp. 367-373, 1997.
- [54] Merlet, J-P. Designing a Parallel Manipulator for a Specific Workspace. *International Journal of Robotics Research*, Vol. 16, pp. 545–556, 1997.
- [55] Burden, R.L. and Faires, J.D. *Numerical Analysis*, 6th ed. Pacific Grove: Brooks/Cole Publishing Company, 1997.
- [56] Shamblin, S.A. and Wiens, G.J. Characterization of Dynamics in PKMs. In *Proceedings Year 2000 Parallel Kinematics Machines International Conference, September 13-15, 2000, Ann Arbor, Mi. USA*, [Orlandea, N. et al. (eds.)], pp. 24-33.
- [57] Gosselin, C.M. and Hadj-Messaoud, A. Automatic Planning of Smooth Trajectories for Pick-and-Place Operations. *Transactions of the ASME Journal of Mechanical Design*, Vol. 115, pp. 450-456, 1993.
- [58] Dasgupta, B. and Mruthyunjaya, T.S. Singularity-Free Path-planning for the Stewart Platform Manipulator. *Mechanisms and Machine Theory*, Vol. 33, pp. 711-725, 1998.
- [59] Merlet, J-P. An Efficient Trajectory Verifier for Motion Planning of Parallel Machine [sic]. In *Proceedings Year 2000 Parallel Kinematics Machines International Conference, September 13-15, 2000, Ann Arbor, Mi. USA*, [Orlandea, N. et al. (eds.)], pp.126-134.
- [60] Wolovich, W.A. *Robotics: Basic Analysis and Design*. New York: CBS College Publishing, 1987.
- [61] Zhang, Q.G. and Greenway, R.B. Development and Implementation of a NURBS Curve Motion Interpolator. *Robotics and Computer-Integrated Manufacturing*, Vol. 14, pp. 27-36, 1998.

- [62] Bahr, B., Xiao, X. and Krishnan, K. A Real-Time Scheme of Cubic Parametric Curve Interpolations for CNC Systems. *Computers in Industry*, Vol. 45, pp. 309-317, 2001.
- [63] Kim, J-H. Ryuh, B-S. and Pennock, G.R. Development of a Trajectory Method for a Five-axis NC Machine. *Mechanism and Machine Theory*, Vol. 36, pp. 983 – 996, 2001.
- [64] Snyman, J.A. The LFOPC Leap-Frog Algorithm for Constrained Optimization. *Computers and Mathematics with Applications*, Vol. 40, pp. 1085-1096, 2000.
- [65] Nikravesh, P.E., *Computer-Aided Analysis of Mechanical Systems*, Englewood Cliffs: Prentice-Hall, Inc., 1988.
- [66] Haug, E.J. *Computer-Aided Kinematics and Dynamics of Mechanical Systems, Volume 1: Basic Methods*, Massachusetts: Allyn and Bacon, 1989.
- [67] Haug, E.J., Wang, J.Y. and Wu, J.K. Dextrous Workspace of Manipulators. I. Analytical Criteria., *Mechanical Structures and Machines*, Vol. 30, pp. 321-361, 1992.
- [68] Buchanan, J.L. and Turner, P.R. *Numerical Methods and Analysis*, New York: McGraw-Hill, Inc., 1992.
- [69] Granville, W.A., Smith, P.F. and Longley, W.R. *Elements of Differential and Integral Calculus, New Revised Edition*, Massachusetts: Blaisdell Publishing Company, 1962.
- [70] Du Plessis, L.J., Snyman, J.A. and Smit, W.J. Optimization of the Adjustable Geometry of a Planar Stewart Platform Machining Center with respect to Placement of Workpiece relative to Tool Path. In Proceedings *Year 2000 Parallel Kinematics Machines International Conference, September 13-15, 2000, Ann Arbor, Mi. USA*, [Orlandea, N. et al. (eds.)], pp. 316-329.
- [71] Snyman J.A. and Smit, W.J. The Optimal Design of a Planar Stewart Platform for Prescribed Machining Tasks. to appear in *Multibody System Dynamics*, 2001.
- [72] Dynamic Analysis Design System, DADS, Computer Aided Design Software Inc., Copyright 1998.
- [73] Haug, E.J., et al., Numerical Algorithms for Mapping Boundaries of Manipulator Workspaces. *Proceedings IUTAM Summer School, Aalborg, Denmark, 1994* 1 – 13, 1994 .
- [74] Snyman, J.A. An Improved Version of the Original Leap-Frog Method for Unconstrained Minimization. *Applied Mathematical Modelling*, Vol. 7, pp. 216-218, 1983.
- [75] Snyman, J.A. The LFOPC Leap-Frog Algorithm for Constrained Optimization. *Computers and Mathematics with Applications*, Vol. 40, pp.1085-1096, 2000.
- [76] Snyman, J.A., Roux, W.J. and Stander, N. A Dynamic Penalty Function Method for the Solution of Structural Optimization Problems, *Applied Mathematical Modelling*, Vol. 180, pp. 371-386, 1994.