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Engineering : Mechanical Engineering

Gogu, Grigore

Structural Synthesis of Parallel Robots

Part 2: Translational Topologies with Two and Three Degrees of Freedom

- Structural synthesis of parallel robots with two to six degrees of freedom
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"The mathematical investigations referred to bring the whole apparatus of a great science to the examination of the properties of a given mechanism, and have accumulated in this direction rich material, of enduring and increasing value. What is left unexamined is however the other, immensely deeper part of the problem, the question: How did the mechanism, or the elements of which it is composed, originate? What laws govern its building up? Is it indeed formed according to any laws whatever? Or have we simply to accept as data what invention gives us, the analysis of what is thus obtained being the only scientific problem left – as in the case of natural history?" Reuleaux, F., Theoretische Kinematik, Braunschweig: Vieweg, 1875
Reuleaux, F., The Kinematics of Machinery, London: Macmillan, 1876 and New York: Dover, 1963 (translated by A.B.W. Kennedy) This book represents the second part of a larger work dedicated to the structural synthesis of parallel robots. Part 1 already published in 2008 (Gogu 2008a) has presented the methodology proposed for structural synthesis. This book focuses on various topologies of translational parallel robots systematically generated by using the structural synthesis approach proposed in Part 1. The originality of this work resides in the fact that it combines the new formulae for mobility connectivity, redundancy and overconstraints, and the evolutionary morphology in a unified approach of structural synthesis giving interesting innovative solutions for parallel mechanisms.

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