

Preface

The balancing of linkages is an integral part of the mechanism design. The challenge of reducing vibrations of the frame on which the mechanism is mounted is nothing new. Despite its long history, mechanism balancing theory continues to be developed and new approaches and solutions are constantly being reported. Hence, the balancing problems are of continued interest to researchers. Several laboratories around the world are very active in this area and new results are published regularly. In recent decades, new challenges have presented themselves, particularly, the balancing of robots for fast manipulation.

The authors believe that this is an appropriate moment to present the state of the art of the studies devoted to balancing and to summarize their research results. This monograph is based on the material published by the first author over the last twenty years and the doctoral dissertation of the second author defended in 2007 and rewarded by the Research Group in Robotics of the French National Center for Scientific Research (GDR Robotique, CNRS, 2008), the French Section of the ASME (2011) and the French Région Bretagne in the category “Sciences, Technologies and Interdisciplinarity” (2011).

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The authors will be also genuinely grateful to the readers for any critical remarks on the material presented in the book and for any suggestion for its improvement.

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Advanced Methods with Illustrative Examples

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