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EDITORIAL

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Review and Perspective in Mechanics

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Over the last 50 years, Acta Mechanica has published a broad range of articles in both traditional and emerging fields. Two years ago, the Editors have decided to start a new section of the journal: Review and Perspective in Mechanics, with two articles per year. Authors of these special articles are invited by the Editors. It is anticipated that each new contribution will provide a coherent review on a topic of some broad interests, highlight new methodologies, and depict a vivid image on the current state-of-the-art and future research directions.

In the fourth article of this Review and Perspective in Mechanics series, we present the work co-authored by Professor Andreas Müller from Johannes Kepler University, Linz, Austria, and Professor Zdravko Terze from the University of Zagreb, Croatia, on multibody systems comprising rigid as well as flexible members. Special emphasis is given in this paper to the advantageous modelling of such dynamic systems by means of formulations of geometric mechanics. The corresponding intense research that has been performed in the literature in the last decade is highlighted, providing a comprehensive and up-to-date review on various geometric topics that are important in the context of multibody systems, such as Lie groups, screw theory, and integration on manifolds. Therefore, a sound foundation of numerical methods that do preserve the system structure and invariants, and thus are accurate as well as long-term numerically stable, is also provided. The paper by Müller and Terze should inspire future advantageous theoretical and numerical formulations in various important engineering fields, such as robotics, machine dynamics, and vehicle dynamics.

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