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Numerical methods for simulation in applied dynamics. In: M. Arnold, W. Schiehlen (eds.), *Simulation Techniques for Applied Dynamics*, vol. 507 of *CISM Courses and Lectures*. – Springer, Wien New York, pp. 191–246. – 2009.

Abstract. Multibody dynamics may be considered as integration platform for simulation in various fields of engineering like vehicle system dynamics, dynamics of machines and mechanisms and robotics. In the present contribution we discuss classical numerical simulation techniques of nonlinear system dynamics, their use in multibody system simulation and extensions to typical problems of applied dynamics like continuous and discrete controllers and multidisciplinary applications. A frequently used alternative approach to the analysis of multidisciplinary problems is based on the coupling of two or more monodisciplinary simulation packages. Typical numerical problems of such co-simulation techniques will be considered and illustrated by numerical tests.

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