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Methods from singular perturbation theory applied to flexible multibody systems. In J.C. Samin, P. Fiset (eds.): Proc. of Multibody Dynamics 2011 (ECCOMAS Thematic Conference). - Brussels, Belgium, 4 – 7 July 2011.

Abstract. Modelling multibody systems results often in a trade-off between detailed model equations and restricted computing time. High frequency eigenmodes may increase drastically the computing time in the simulation of flexible multibody systems following the floating frame of reference approach. Neglecting small inertia terms allows to speed-up time integration substantially. The approach is theoretically justified by strict error estimates from singular perturbation theory.

In the present paper, a four-bar mechanism is used as an instructive example that highlights the potential and the limitations of this method in the application to flexible multibody systems.

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