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A quasi-static approach for constrained systems in real-time simulation. - Proc. Angew. Math. Mech. 7:4010021–4010022. - 2007. - doi:10.1002/pamm.200700704.

**Abstract.** Detailed multi-body system models in applications like vehicle dynamics, robotics and bio-mechanics are designed for accurate off-line simulation. For real-time applications simplified models are used. The presented quasi-static solution method focuses on accelerated computation of the low frequency parts of the solution of the nonlinear equations of motion. The high frequency parts are eliminated by neglecting some of the inertia forces and torques. This reduces numerical stiffness and allows larger step-sizes for the time-integration. The efficient and real-time capable combination with existing highly efficient algorithms for multi-body dynamics ( $\mathcal{O}(N)$  multi-body formalisms) requires appropriate integration methods that are adapted to the special structure of the multi-body formalism and solve the non-linear constraints with a small, limited number of calculation steps.

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