O. Brüls, M. Arnold
The generalized-α scheme as a linear multistep integrator: Towards a general mechatronic simulator. In: Proceedings of IDETC/MSNDC 2007, ASME 2007 International Design Engineering Technical Conferences, Las Vegas, NV, 4-7 September, 2007.

Abstract. This paper presents a consistent formulation of the generalized-α time integration scheme for mechanical and mechatronic systems. The algorithm can deal with a nonconstant mass matrix, controller dynamics, and kinematic constraints. The theoretical background relies on the analogy with linear multistep formulae, which leads to elegant results related with consistency, order conditions for constant and variable stepsize methods, as well as global convergence. The algorithm is applied for the simulation of a vehicle semi-active suspension.

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