

论文

计算微分代数系统的实时仿真算法

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摘要:

关键词:

REAL-TIME SIMULATION ALGORITHMS FOR COMPUTING DIFFERENTIAL-ALGEBRAIC EQUATION

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Abstract:

Differential-algebraic equations (DAE's) arise naturally in many applied fields, but numerical and analytical difficulties that have not appeared in ordinary differential equations (ODE's) occur in DAE's because it includes algebraic constrained equations. Some efficient numerical methods for ODE's can not work well for DAE's. So many eminent numerical analysis scholars are interested in this field recently. But few numerical methods are able to solve all DAE's because of its essential difficulties. This paper discusses the simulation algorithm character of DAE's. And we construct an efficient constrained-algebraic algorithm based on the Runge-Kutta methods of order two for the semi-explicit differential-algebraic equations with index two and give the computational experiment results for specific examples. The experiment results indicate that the constrained-algebraic algorithm is high efficient for semi-explicit differential-algebraic equations with index two.

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