Electronic Transactions on Numerical Analysis.
Volume 4, pp. 138-157, December 1996.

ISSN 1068-9613.

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LOCAL AND GLOBAL INVARIANTS OF LINEAR DIFFERENTIAL-ALGEBRAIC EQUATIONS AND THEIR RELATION*

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Abstract. We study local and global invariants of linear differential-algebraic equations with variable coefficients and their relation. In particular, we discuss the connection between different approaches to the analysis of such equations and the associated indices, which are the differentiation index and the strangeness index. This leads to a new proof of an existence and uniqueness theorem as well as to an adequate numerical algorithm for the solution of linear differential-algebraic equations.

Key words. differential-algebraic equations, invariants, differentiation index, strangeness index, normal form, existence and uniqueness.

AMS subject classification. 34A09.

*Received May 3, 1996. Accepted for publication November 6, 1996. Communicated by G. Ammar.
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This work has been supported by *Deutsche Forschungsgemeinschaft, Research grant Me 790/5-1 Differentiell-algebraische Gleichungen.*