

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

PETER KUNKEL[†] AND VOLKER MEHRMANN[‡]

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.

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[†] Fachbereich Mathematik, Carl von Ossietzky Universität, Postfach 2503, D-26111 Oldenburg, Fed. Rep. Germany

[‡] Fakultät für Mathematik, Technische Universität Chemnitz-Zwickau, D-09107 Chemnitz, Fed. Rep. Germany.

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