

UNIQUE PRIME FACTORIZATION IN A PARTIAL SEMIGROUP OF MATRIX-POLYNOMIALS

MICHAEL KALTENBÄCK AND HARALD WORACEK

*Institute for Analysis and Scientific Computing
Vienna University of Technology
Wiedner Hauptstr. 8–10/101, A–1040 Wien, Austria*

e-mail: michael.kaltenbaeck@tuwien.ac.at

e-mail: harald.woracek@tuwien.ac.at

Abstract

We establish a unique factorization result into irreducible elements in the partial semigroup of 2×2 -matrices with entries in $K[x]$ whose determinant is equal to 1, where K is a field, and where multiplication is defined as the usual matrix-multiplication if the degrees of the factors add up. This investigation is motivated by a result on matrices of entire functions.

Keywords: partial semigroup, unique prime factorization.

2000 Mathematics Subject Classification: 20M10, 08A55, 15A23.

REFERENCES

- [1] L. de Branges, Hilbert spaces of entire functions Prentice-Hall, London 1968.
- [2] D. Alpay, Ya. Azizov, A. Dijksma and H. Langer, *The Schur algorithm for generalized Schur functions III: J-unitary matrix polynomials on the circle*, Linear Algebra Appl. **369** (2003), 113–144.
- [3] D. Alpay, A. Dijksma and H. Langer, *Factorization of J-unitary matrix polynomials on the line and a Schur algorithm for generalized Nevanlinna functions*, Linear Algebra Appl. **387** (2004), 313–342.

- [4] M. Kaltenbäck and H. Woracek, *Pontryagin spaces of entire functions I*, Integral Equations Operator Theory **33** (1999), 34–97.
- [5] M. Kaltenbäck and H. Woracek, *Pontryagin spaces of entire functions II*, Integral Equations Operator Theory **33** (1999), 305–380.
- [6] M. Kaltenbäck and H. Woracek, *Pontryagin spaces of entire functions III*, Acta Sci. Math. (Szeged) **69** (2003), 241–310.

Received March 2004
Revised November 2005