

# The relationship between the Jordan structure at $\infty$ for matrix polynomials and the index of high order DAEs

Volker Mehrmann \*

22.2.06

## Abstract

We discuss the Jordan structure at  $\infty$  and the singular structure for matrix polynomials and show under which transformations to the matrix polynomial these structure stay invariant.

In a similar manner we discuss the index and singular parts of linear high order constant coefficient DAEs.

We then compare these two concepts, which fall together for linear matrix polynomials and first order DAEs and show the differences for higher order DAEs and matrix polynomials.

---

\*Institut für Mathematik, MA 4-5, Technische Universität Berlin, Str. des 17. Juni 136, D-10623 Germany, F.R.G., [mehrmann@math.tu-berlin.de](mailto:mehrmann@math.tu-berlin.de).