

Nonlinear polynomial eigenvalue problems with palindromic and symplectic structure

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Abstract

We will present several practical examples for nonlinear palindromic and symplectic eigenvalue problems and discuss their properties. Although these problems on first sight look quite different we show how they are related via a non-unimodular transformation that preserves the important part of the spectrum. We discuss structure preserving linearization and canonical forms for such matrix polynomials and we introduce numerical methods for the solution of the eigenvalue problem.