Canonical forms for companion matrices

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In the following we introduce some canonical forms for companion matrices and present some applications of these forms. We intend to present new results, surprising identities and to give an overview of what is known so far on companion matrices. Our motivation for considering Bidiagonal and Bidiagonal-Frobenius canonical forms is to use them as a theoretical tool, for instance in stability considerations.

[1] A.Eder, G.Kirlinger: *A normal form for multistep companion matrices*, Math.Models and Methods in Appl.Sciences, Vol.11, No1(2001) 57-70
[2] W.Auzinger, G.Kirlinger, O.Koch: *Canonical forms for companion matrices and applications*, in preparation (2005)

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