Symbolic solutions of algebraic ODEs:
a comparison of methods

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Abstract. In this paper, the two methods for finding rational general solutions of first-order algebraic ODEs introduced in Ngô and Winkler ([19], [20], [21]) and Vo, Grasegger and Winkler [26] are compared. Both methods assign some affine algebraic set to an algebraic ODE. Provided the assigned algebraic sets are suitably parametrizable, the initial ODE can be reduced to a more fundamental (set of) differential equation(s). The two approaches lead to a common rational parametrization in certain situations, in which case the corresponding derived differential equation(s) are shown to coincide. Finally, a discussion on relations between certain classes of first-order algebraic ODEs with respect to their rational general solvability is provided.

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