Simple Forms of Pseudo-linear systems

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Extended from the ideas developed in [1] and [2] for difference and differential systems, we introduce a direct method for transforming any non-simple pseudolinear system of the form $A\delta Y + B\phi Y = 0$ into a simple one, where A and B are in some ring of power series, with δ a *pseudo derivation* and ϕ an automorphism holding suitable properties. We show its application to some computer algebra problems, such as determining the nature of a singularity (regular/irregular), computing regular solutions of a pseudo-linear system, and computing rational solutions of differential, difference and q-difference systems.

Références

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- [2] Barkatou M., El Bacha C. (2013) On k-simple forms of first-order linear differential systems and their computation. Journal of Symbolic Computation, Elsevier, 54, pp.36-58.