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Title: Rational general solutions of systems of autonomous ordinary differential equations of algebro-geometric dimension one

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An algebro-geometric method for determining the rational solvability of autonomous algebraic ordinary differential equations is extended from single equations of order 1 to systems of equations of arbitrary order but dimension 1 in the algebro-geometric sense. We provide necessary conditions, for the existence of rational solutions, on the degree and on the structure at infinity of the associated algebraic curve. Furthermore, from a rational parametrization of a planar projection of the corresponding space curve one deduces, either by derivation or by lifting the planar parametrization, the existence and actual computation of all rational solutions if they exist. Moreover, if the differential polynomials are defined over the rational numbers, we can express the rational solutions over the same field of coefficients.

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