

## From formal to actual Puiseux series solutions of algebraic differential equations of first order

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**Abstract.** The existence, uniqueness and convergence of formal Puiseux series solutions of non-autonomous algebraic differential equations of first order at a nonsingular point of the equation is studied, including the case where the celebrated Painlevé theorem cannot be applied explicitly for the study of convergence. Several examples illustrating relationships to the Painlevé theorem and lesser-known results of Petrović are provided.

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