Algebraic method of group classification for semi-normalized classes of differential equations

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Abstract

The theory of semi-normalized classes of differential equations is studied and generalized by using the extended algebraic method of group classification of such classes. We prove the theorems on factoring out symmetry groups and invariance algebras of systems from semi-normalized classes and on splitting such groups and algebras within disjointedly semi-normalized classes. To illustrate the efficiency of the developed theory, we apply it to the group classification problem for the class of $(1+n)$-dimensional linear Schrödinger equations with complex-valued potentials for the general value of $n \geqslant 1$.