Olena Vaneeva [1], Olena Magda [2], Alexander Zhalij [1]

[1]Institute of Mathematics
[2]Kyiv National Economic University named after Vadym Hetman
vaneeva@imath.kiev.ua, olena.magda@gmail.com, zhaliy@imath.kiev.ua

Group analysis of the class of generalized Kawahara equations: reductions and contractions

We continue to study with the Lie symmetry point of view the class of generalized Kawahara equations with time-dependent coefficients,

$$u_t + \alpha(t)f(u)u_x + \beta(t)u_{xxx} + \sigma(t)u_{xxxxx} = 0, \quad f_u\alpha\beta\sigma \neq 0, \tag{1}$$

where f, α, β and σ are smooth nonvanishing functions of their variables.

The equivalence groupoid of this class was found in [1], the complete group classification was performed therein. We complete the study by finding the optimal list of one-dimensional subalgebras of the respective maximal Lie symmetry algebras as well as by performing the reductions and contractions.

1. Vaneeva O., Magda O., Zhalij A. Equivalence groupoid and enhanced group classification of a class of generalized Kawahara equations, *Springer Proceedings in Mathematics & Statistics, XIII International Workshop "Lie Theory and Its Application in Physics"*, **335** (2020), 329–340;
https://doi.org/10.1007/978-981-15-7775-8_23.