

Exact almost universal solutions to higher-order gravities

We will present a method for generating Weyl type III and N exact vacuum solutions of any higher-order gravity theory whose Lagrangian is constructed from the metric, the Riemann tensor and its covariant derivative of arbitrary order. The almost universal solutions of these theories are constructed using Kerr-Schild transformation of universal seed metrics and belong to the Kundt class of non-expanding, non-shearing and non-twisting spacetimes with the Ricci tensor including null radiation term. The application of this method will be demonstrated on the examples of quadratic gravity and conformal gravity in six dimensions. We will also briefly discuss Weyl type II almost universal solutions of quadratic and cubic gravity using specific block-diagonal forms of the metric ansatz.

Based on: Kuchynka, Malek, Pravda, Pravdova, Phys. Rev. D 99, 024043 (2019)