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Static, spherically symmetric black holes in quadratic gravity

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It can be shown that all Robinson-Trautman spacetimes are conformal to Kundt spacetimes. For spacetimes with constant Ricci scalar, all quadratic gravity corrections to Einstein gravity can be combined into the Bach tensor which is well behaved under conformal transformations.

Combining these results leads to a considerable simplification of the vacuum field equation of quadratic gravity for static, spherically symmetric spacetimes.
This allow us to study non-Schwarzschild static, spherically symmetric black holes in four-dimensional quadratic gravity using analytical methods.

Based on:

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J. Podolský, R. Švarc, V. Pravda, and A. Pravdová, Phys. Rev. D 98, 021502(R) (2018),
R. Švarc, J. Podolský, V. Pravda, and A. Pravdová, Phys. Rev. Lett. 121, 231104 (2018),
and papers in preparation.

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