

# Rotating Black Holes in Higher Order Gravity

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I will present a new technique for finding black hole solutions in modified gravity that have “stealth” hair, i.e., hair whose only gravitational effect is to tune the cosmological constant. Considering scalar-tensor theories in which gravitational waves propagate at the speed of light, I will show that Einstein metrics can be painted with stealth hair provided there exists a family of geodesics always normal to spacelike surfaces. I will also present a novel scalar-dressed rotating black hole that has finite scalar field at both the black hole and cosmological event horizons.

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[1] C. Charmousis, M. Crisostomi, R. Gregory and N. Stergioulas, arXiv:1903.05519 [hep-th].