

Rotating black holes in fake supergravity

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Black holes in fake supergravity

- supersymmetric solution in 5-dimensional “fake supergravity”

$$S = \frac{1}{2\kappa_5^2} \int \left[({}^5R + 2g^2V) \star_5 1 - \mathcal{G}_{AB} d\phi^A \wedge \star_5 d\phi^B - G_{IJ} F^{(I)} \wedge \star_5 F^{(J)} - \frac{1}{6} C_{IJK} A^{(I)} \wedge F^{(J)} \wedge F^{(K)} \right],$$

- ▶ wick-rotation ($g \rightarrow ik$) gives a positive potential $U = 2k^2V > 0$
- ▶ obtain a rotating BH admitting a “Killing spinor”

$$ds_5^2 = -f^2(dt + \omega)^2 + f^{-1}h_{mn}dx^m dx^n,$$

h_{mn} : hyper-Kähler

$$\delta\psi_\mu = \left[\mathcal{D}_\mu + \frac{3k}{2} V_I A_\mu^{(I)} + \frac{i}{8} X_I (\gamma_\mu^{\nu\rho} - 4\delta_\mu^\nu \gamma^\rho) F_{\nu\rho}^{(I)} + \frac{i}{2} k \gamma_\mu X^I V_I \right] \epsilon = 0$$

See poster 51 for details.