AdS Black Hole Solution with nontrivial dilaton in

Dilatonic Einstein Gauss-Bonnet Gravity Theory

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Motivations

- Higher curvature correction ⬅ string corrected gravity

  - Lovelock gravity (generalization of Einstein gravity)

  - Gauss-bonnet term next order to Einstein-Hilbert term

- dilaton field : one of the main cast in string theory

- Most of works on black hole solutions in higher curvature gravity is without dilaton.

- We consider dilatonic Einstein Gauss-Bonnet gravity in String frame.

$$S_{DEGB} = \frac{1}{2\kappa_D^2} \int d^D x \sqrt{-g}\, e^{-2\phi}\left(R + 4\nabla_\mu\phi\nabla^\mu\phi + \alpha_2 R_{GB}\right),$$

- We obtain AdS spacetime with non trivial dilaton field is exact (planar symmetry).

$$ds_D^2 = -\frac{r^2}{\ell^2}dt^2 + \frac{\ell^2}{r^2}dr^2 + r^2 dr_{D-2}^2, \quad \phi = p\ln\left[\frac{r}{\ell}\right]$$

AdS spacetime   linear dilaton

- We numerically construct an asymptotically AdS Black hole (hyperbolic symmetry).

Our poster is presented at No.61
Thank you for your attention