

No-dipole-hair theorem for higher-dimensional static black holes

Seiju Ohashi

Department of Physics , Kyoto University

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with Roberto Emparan , Tetsuya Shiromizu

What type of hair can exist in static black hole spacetime ?

We consider the system

$$\mathcal{L} = R - \frac{1}{2}(\partial\phi)^2 - \frac{1}{p!}e^{-\alpha\phi}H_{(p)}^2$$

No-dipole-hair Theorem

Static black objects in n-dimensional asymptotically flat spacetime can not have **non-trivial electric p-form** field strengths ,when $(n+1)/2 \leq p \leq n-1$.

(**Positive energy theorem** is the key theorem for the proof)

Thank you for your attention

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