Sixteenth Marcel Grossmann Meeting



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Holography for Rotating Black Holes in f(T) Gravity

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The nonextremal Kerr black holes have been considered to be holographically dual to two-dimensional (2D) conformal field theories (CFTs). In this talk, we extend the holography to the case of an asymptotically anti– de Sitter (AdS) rotating charged black holes in $f(T)=T+\alpha T^2$ gravity, where α is a constant. We find that the scalar wave radial equation at the near-horizon region implies the existence of the 2D conformal symmetries. We note that the 2π identification of the azimuthal angle ϕ in the black hole line element, corresponds to a spontaneous breaking of the conformal symmetry by left and right temperatures TL and TR, respectively. We show that choosing proper central charges for the dual CFT, we produce exactly the macroscopic Bekenstein-Hawking entropy from the microscopic Cardy entropy for the dual CFT. These observations suggest that the rotating charged AdS black hole in f(T) gravity is dual to a 2D CFT at finite temperatures TL and TR for a specific value of mass M, rotational, charge, and f(T) parameters, Ω , Q, and $|\alpha|$, respectively.

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