

Thermodynamic manifolds and stability of black holes in various dimensions

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We consider applications of Thermodynamic information geometry to the space of equilibrium states of black holes in Modified theories of gravity.

Our investigation focuses on the properties and the applicability of three geometric approaches, namely Hessian thermodynamic metrics, Legendre invariant metrics and the method of conjugate potentials.

We also discuss the similarities and the differences between the approaches. The black hole solutions under consideration include three-dimensional lifshitz and warped black hole solutions and Deser-Sarioglu-Tekin black hole in four dimensions.