

PHYSICAL COLLOQUIUM
INVITATION

Monday, 21.11.2016, 4.15 p.m., W2-1-148

speaks

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about

Can Black Holes be described by Thermodynamics?

Serious problems have been raised about the idea that black holes "really are thermodynamical objects", for instance: that the Zeroth Law for black holes, constancy of surface gravity, is not equivalent to the deepest formulation of the Zeroth Law for ordinary thermodynamics, transitivity of equilibrium; that black-hole area is neither an extensive nor an additive quantity, as ordinary thermodynamical entropy is; that a lack of a general, localized expression for gravitational energy makes it difficult to construct a thermodynamical internal energy for black holes; and several more along the same lines. The fundamental concern is that the mere fact that the relevant black-hole quantities satisfy formal analogues of the Laws of ordinary thermodynamics does not by itself guarantee that enough of the structure of ordinary thermodynamics is thereby recovered. There is much more to thermodynamics, after all, than just the four Laws. Transitivity of equilibrium, for instance, normally grounds the construction of the state space of an ordinary thermodynamical system and the arguments that isolated systems spontaneously approach equilibrium. I argue in this talk that all these problems can be answered, and that black-hole can meaningfully be treated as thermodynamical objects.

All interested persons are cordially invited.

Sgd. Prof. Claus Lämmerzahl