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Strong interactions and Bekenstein – Hawking black hole entropy

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All particles created through the Hawking process have to be generated in the collapsing object. The black hole internal states should be related to the precollapsed state (a one-to-one correspondence between the internal state and precollapse configuration).
The baryons that formed the initial collapsing star cannot reappear since all their rest energy has been carried away by the thermal radiation. Therefore, the Hagedorn temperature should have been reached before the end of collapse of the star, and hadrons decayed as quarks and gluons, as a consequence of deconfinement. We assume that the BH entropy, which counts the internal microstates, should depend on the strong interaction fundamental scale. Inside the quark star formed after deconfinement, we assume there exists negative pressure $p = -B = -\epsilon$ (B - the bag constant, ϵ - the energy density) at zero chemical potential in vacuum, related to the confinement process, akin to inside hadrons, where a strong gravity model is proposed.
The Bekenstein black hole entropy expression is adjusted separately for $m > m_P$ and for $m < m_P$, where $m_P = 10^{-5} g$ is the Planck mass. We found that black holes with $m < m_P$ will not evaporate, an old idea expressed by V. Mukhanov in 1986.

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