Contribution ID: **81** Type: **not specified**

Bag model revisited

Motivated by a recent opinion expressed by M. C. Andersen that there are striking similarities between a quantum particle and a mini-black hole, we investigate the possibility that a nucleon (say, a proton) is akin to a black hole. From the MIT Bag model we know that the confinement of strongly interacting particles inside hadrons is accomplished in a Lorentz-invariant way, i.e., $T_{ab} \propto g_{ab}$ (T_{ab} is the stress tensor inside hadrons), leading to $\epsilon = -p = B \approx 160 MeV/fm^3$, where B is the bag constant. From General Relativity we know that the equation of state $p = -\epsilon$ leads to a de Sitter spacetime. To satisfy the junction conditions at the interface, we choose as geometry outside a proton a regular Schwarzschild spacetime. Moreover, we found that the outer and inner radial pressures are equal at the junction surface, as it should be.

Primary author: CULETU, Hristu

Presenter: CULETU, Hristu

Session Classification: Contributed Presentations