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Short Theory on the Creation and Nature of Black Holes

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Suppose there exists a limit in the amount of energy that a mass can have. Let this energetic limit be measured per unit of mass, such that no unitary mass can surpass this boundary.

Moments before the creation of a black hole, the core of a massive star collapses due to its own gravitational self attraction. Should there be a fraction of the mass that reaches the hypothesized energetic limit, that object, no matter how small, would create a singularity. The gravitational pull would be maximum at the object's theoretical center of mass. Thus, in order to avoid having any unit of mass surpassing this limit, a shell could emerge from the center of gravity outwards, creating an empty space inside. Initially, the shell would be formed by the mass that reached the energetic limit, spread evenly on its surface. Because of the energy conservation law, each unit of mass on the surface, would be precisely at the energetic limit. But as soon as other masses are being attracted, the shell expands and the total mass spreads more over the surface, not to violate the energy condition. In other words, the black hole must increase in size to avoid an excess of overlapping mass, if not, it would surpass the energetic limit. If there are other regions of the imploding star that are collapsing as well, they would be eventually colliding and merging into a bigger entity. This empty nature could also be perceived from the fact that the black hole entropy is only dependent on the area of its surface, not on its volume.

It is believed that the speed of light is the speed limit, thus it might not seem unreasonable to have a kinetic specific energy limit (the term specific energy in this context refers to energy per unit of mass). In order to suggest a value for this presumed constant, ε, one could resort to the gravitational specific energy on the surface of a Schwarzschild black hole,

$$\varepsilon = \frac{E}{m} = g\ R_s = \frac{G\ M}{R_s}, \tag{1}$$

where E is the energy of a mass m sufficiently small and concentrated at the surface of the black hole, R_s is the Schwarzschild radius, G is the gravitational constant, M is the total mass of the black hole, and g is the gravitational acceleration generated on the surface with respect to the center of gravity, which has a value of $\frac{G\ M}{R_s^2}$. Considering the value of the Schwarzschild radius, $\frac{2\ G\ M}{c^2}$, the energetic limit would be,

$$\varepsilon = \frac{c^2}{2}. \tag{2}$$

Should the reader want to derive the radii for the Kerr, Kerr-Newman, or the Reissner-Nordström black holes, it would be necessary to consider the combined effect of the electrostatic, the rotational and the gravitational specific energies.