

# **A new explanation for dense and compact bodies in terms of softness and hardness**

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Based on the discoveries in the field of astrophysics, we know that there are stars and celestial objects in the universe that are made up of only fundamental particles such as protons or neutrons, which are much denser than an ordinary star and usually formed as a result of the explosion of a star.

For example, one can refer to neutron stars or magnetars, which are made up only of neutrons, or proton stars (white dwarfs), which are usually formed as a result of the explosion of other stars, as well as black holes, which can be created as a result of the gravitational collapse of a massive star. The interesting point is that these objects are very dense, with a density of around  $10^{16}$  (Kg/m<sup>3</sup>) or more.

On the other hand, the density of these objects is very high, the particles do not have any compression.

In fact, it can be said that such density is part of their natural structure and nature, and the term compression that we have in mind cannot be attributed to them. To better understand this, consider mercury, which is a high-density element but is a liquid metal and can be easily separated. (Mercury has a higher density than iron)

