

Ultimate Structure of Proton

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If we take a look at the proton, we see a sun which is made of a large collection of small particles. The structure of the proton is similar to a cherry or to the sun with two layers; the core and the mantle. The core is almost spherical and its radius is about one-third of the radius of the entire proton, but its density is about 15 times more than the mantle. The mantle is a brawny layer, which includes about $2/3$ of the total radius and completely encircles the core by a much lower density than it. Up to the present day, to understand the proton's structure, scientists send a beam of isolated protons speeding clockwise, while the second beam of protons is sent counterclockwise to collide the first one. Then a particle detector is waiting to measure all the subatomic particles that erupt from the collisions. This method is similar to that of a certain researcher who does not know what an airplane is made of but tries to understand its structure by observing the different parts of two collided airplanes. So he is going to say that an airplane is made of two wings, fuselage and some small parts; this interpretation is correct but it is at the same time partial. But what really happens when two protons collide? Indeed due to the severity of the collision, the mantle part splits into two large fragments and some tiny particles but the smash is not enough to split the dense core. So the heavy dense particle which is called down quark is not anything other than the proton's core, the two parts of the mantle that are larger, lighter and less dense than the core, are not something other than the up quarks and the other small parts are rays.

