

Title – **Quark Stars and Black Holes**

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Abstract –

According to the article "Quark Star Plays Role in New Theory for Brightest Supernovae" by Jeanna Bryner, Senior Writer | June 03, 2008 (<http://www.space.com/5450-quark-star-plays-role-theory-brightest-supernovae.html>), "Other explanations for the bright supernovae are possible, the researchers say". I think these "other explanations" reveal that the scientists are going in the right direction but have failed to go far enough. As the article says, "Quarks are considered to be the tiniest elementary particles that form the building blocks for protons and neutrons, which in turn form atoms." The term "tiniest elementary particles" appears to mean "the ground state or lowest possible energy level". And according to the next paragraph I've written, "the binary digits of 1 and 0 must surely be the ground state or lowest possible energy level". Admittedly, this explanation probably sounds more unusual than the notion of quark stars. But I believe my explanations answer every question more than satisfactorily. In the end, my explanations lead back to black holes instead of quark stars. And black holes, while as unusual as my ideas, are scientifically accepted while the article points out that quark stars are still just theoretical.

Content –

In 1984, Princeton physicist Ed Witten conjectured that the true ground state of matter (in the sense of the lowest energy per particle) consists of a mixture of roughly equal numbers of up, down, and strange quarks, with enough electrons thrown in to ensure that this soup is electrically neutral. Scientists have never demonstrated this conjecture to be true, and don't have proof that stars made of such matter ("quark stars") exist. And I don't believe they ever will demonstrate it to be true, nor will they find Quark Stars. Why? Because the binary digits of 1 and 0 must surely be the ground state or lowest possible energy level - not only of matter but also of space-time.*

* Hidden variables is an interpretation of quantum mechanics which is based on belief that the theory is incomplete (Albert Einstein is the most famous proponent of hidden variables) and it says there is an underlying reality with additional information of the quantum world. Their identification would lead to problems having exact, instead of merely probabilistic, outcomes – and could also restore a reality that exists independently of observation ("Quantum" by Manjit Kumar – Icon Books 2008, p.379) I suggest the hidden variables composing this reality is the binary digits. According to Einstein, gravitation is the warping of "empty" space – it is not empty but is filled with quantum fluctuations (a quantum fluctuation is the temporary change in the amount of energy at a point in space, and could be the result of switching a binary "one" to a binary "zero" [or vice versa]). Fluctuations could then be called virtual particles by physicists.

In this scenario, how would mathematics (the system of binary digits is base-2 maths) be converted into the physical universe? Through the use of what I call Digital String Theory (gravity would be united with the electromagnetic force if gravitation and electromagnetism are both products of a mathematical foundation to the universe). Let's borrow a few ideas from string theory's ideas of everything being ultimately composed of tiny, one-dimensional strings that vibrate as clockwise, standing, and counterclockwise currents in a four-dimensional looped superstring. We can visualize tiny, one dimensional binary digits of 1 and 0 (base 2 mathematics) forming currents in a two-dimensional program called a Mobius loop – or in 2 Mobius loops, clockwise currents in one loop combining with counterclockwise currents in the other to form a standing current. Combination of the 2 loops' currents requires connection of the two as a four-dimensional figure-8 Klein bottle. This connection can be made with the infinitely-long irrational

and transcendental numbers. Such an infinite connection translates - via bosons being ultimately composed of 1's and 0's depicting pi, e, $\sqrt{2}$ etc.; and fermions being given mass by bosons interacting in matter particles' "wave packets" – into an infinite number of Figure-8 Klein bottles, which are "subuniverses" composing the one and only universe (and there is only one set of the laws of physics). Binary digits fill in gaps and adjust edges to fit surrounding subuniverses (vastly simplified, this is similar to manipulation of images by computers). Slight "imperfections" in the way the Mobius loops fit together determine the precise nature of the binary-digit currents (the producers of gravitational waves, electromagnetic waves, the nuclear strong force and the nuclear weak force) and thus of exact mass, charge, quantum spin. Referring to a Bose-Einstein condensate, the slightest change in the binary-digit flow (Mobius loop orientation) would alter the way gravitation and electromagnetism interact, and the BEC could become a gas (experiments confirm that it does).

So there's no such thing as a quark-electron mixture forming Quark Stars. But there is a mixture of 1's and 0's forming matter, energy, forces, and all space-time. The formation of binary digits that most resembles stars, or masses of perhaps billions of stars, would be that part of space-time called Black Holes. Black holes aren't composed of matter but do have mass because they are meeting-places and "sinks" for the gravitational currents flowing in and between galaxies.** They possess charge because the universe's mathematical foundation unites gravity/spacetime with electricity/magnetism (see the paragraph about Digital String Theory). Since it has mass, a black hole can naturally possess the 3rd property of holes viz. spin.

** Suppose Albert Einstein was correct when he said gravitation plays a role in the constitution of elementary particles (in "Do Gravitational Fields Play An Essential Part In The Structure of the Elementary Particles?" – a 1919 submission to the Prussian Academy of Sciences). And suppose he was also correct when he said gravitation is the warping of space-time. Then it is logical that 1) gravitation would play a role in constitution of elementary particles, and their mass, and also in the constitution of the forces associated with those particles, and 2) the warping of space-time that produces gravity means space-time itself plays a role in the constitution of elementary particles, their mass, and the forces. Matter can be thought of as "coherent space" that is bound by forces.