Title –

The Gravitational Origin of Cosmic Rays and Why There's Only One Fundamental Force

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Abstract –
First, I refer you to two statements in "Solving the mystery of COSMIC RAYS" by Angela Olinto (Astronomy magazine - April 2014)**:**

a) In 2013, scientists discovered that cosmic rays - charged particles travelling near the speed of light - get their energy by travelling back and forth over the edges of supernova remnants ... The origins of the highest-energy cosmic rays, though, remain a mystery."
b) "Or are they (ultra-high-energy cosmic rays) accelerated in the explosive deaths of the massive stars that create black holes and neutron stars?"

Then I ask if the theories of Einstein suggest the origin of ultra-high-energy cosmic rays is, ultimately, gravitational?

Content –
When gravitational waves in outer space meet the atoms in a supernova, they're focused and amplified by the density of the supernova's particles acting like a quantum-scale gravitational lens or "graviton lens" (just as some of the waves passing an island are refracted toward the shore by the island's mass). When Einstein penned E=mc^2, he used c (c^2) to convert between energy units and mass units. The conversion number is 90,000,000,000 (300,000 km/s x 300,000 km/s) which approx. equals 10^11. After weak gravity waves (let's assign them a strength of 1 or 10^0) impact a supernova, they're concentrated 10^25 times within the matter (to 10^25, weak nuclear force's strength). Mass units equal energy units divided by c^2, or m=E/c^2 (which is E=mc^2 when the famous formula is solved for mass). E=mc^2 means a tiny amount of mass can be converted into a very large amount of energy. Similarly, m=E/c^2 means a very large amount of energy is converted into a tiny amount of mass. The W and Z particles which carry the weak force are thus created (and gravity actually becomes the weak force whose range is a tiny 10^-18 metres or 0.1% of a proton's diameter, due to the W+, W- and Z^0 having large masses of 162,000 to 182,000 times an electron's). Since the weak force is responsible for radioactivity (emission of particles and gamma rays), particles called ultra-high-energy cosmic rays may be emitted by the supernova. The dying star is also capable of radiating energy in the forms of gamma rays or other electromagnetic frequencies such as visible light and microwaves. Or the radiated energy can be the wavelength of gravitational waves. These gravity waves are the result of strength-1 waves being absorbed into the star, amplified by varying orders, then emitted as lower energy i.e. the gravitation has lost its

amplification and been returned to the weak state we're familiar with (m=E/c^2 has stolen nearly all of gravity's power).

In order for the supernova to emit electromagnetic waves, the gravity waves must be further magnified by the matter's density after they attain the weak force's strength to achieve electromagnetism's strength (10^36 times gravity's strength) i.e. 10^25 is multiplied by Einstein's conversion factor [10^11] and gives 10^36. This means gravitons become photons; and shows that Einstein was on the right track nearly a century ago when he said gravitation and electromagnetism may be related. Why is it possible for gravitons to become photons? 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 Klein bottle. This connection can be made with the infinitely-long irrational and transcendental numbers. Such an infinite connection translates - via bosons (force carriers or transmitters) being ultimately composed of the binary digits of 1 and 0 depicting pi, e, √2 etc.; and fermions (matter's constituents) being given mass by bosons interacting in matter particles' "wave packets" – into an infinite number of Figure-8 Klein bottles which are, in fact, "subuniverses" (we live in a 13.8 billion-year-old subcosmos**:** binary digits fill in gaps and adjust edges to fit surrounding subuniverses [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 space-time-hyperspace, gravitational waves, electromagnetic waves, the nuclear strong force and the nuclear weak force) and thus of exact mass, charge, and quantum spin. Gravitons turn into photons by "packet switching" (the sequence of 1s and 0s in a graviton switching within its wave packets to a photon's sequence). Maybe this would help answer Einstein's 1951 question, "Fifty years of pondering have not brought me any closer to answering the question, what are light quanta?" (Discover Magazine – March 2014, p.31) If the origin of ultra-high-energy cosmic rays is, ultimately, gravitational**;** those cosmic-ray particles would possess a charge because gravity is electromagnetism. Products of gravitational waves would have positive or negative charge, north or south polarity. And these electric waves can cancel to form neutrality, as can the magnetic waves.

Black holes are products of gravitational waves that may be thought of as meeting-places and "sinks" for the gravitational currents flowing in and between galaxies. Though they aren't composed of matter, they do have mass because they are "gravity sinks" and gravity is capable of producing matter and mass. In black holes, the mass falling into them is relativistically converted into the energy of binary digits i.e. the bosons stop interacting in wave packets to produce the forces we identify as mass, and the bosons – which are ultimately composed of the binary digits depicting pi, e, √2 etc. – register as 1's and 0's. They possess charge because the universe's mathematical foundation unites gravity

(spacetime's warping) with electricity/magnetism. Since it has mass, a black hole can naturally possess the 3rd property of holes viz. spin. Far from the hole becoming infinitely dense and infinitely massive, there is no singularity but the matter is "shred" into binary digits by the black hole's fantastic pressure. There's a stronger gravitational force on the surface of the Earth than in orbit because gravity is concentrated in the surface matter. So, like in a black hole, time is slowed down (by much less and at lower altitudes, in the case of Earth).

Gravitons and photons both exist within the supernova now. If 10^2 (100) of either interact with 10^0 (1) of the other, the strength of gravity is boosted from 10^36 to 10^38 and the weakest fundamental force of gravity is transformed into the most powerful fundamental force, the strong nuclear interaction. Its range is changed from infinite to 10^-15 metres (the diameter of a medium sized nucleus). http://hyperphysics.phy-astr.gsu.edu/hbase/forces/color.html#c1 has a good explanation for why the range is tiny despite gluons – the strong force's carrier particles – having no mass. It says, "A property of quarks labeled color is an essential part of the quark model. The force between quarks is called the color force (like fundamental and technicolour* forces, this is also traceable to a gravitational source). Since quarks make up the baryons (in the Standard Model of particles and forces and their interactions, baryons include protons and neutrons), and the strong interaction takes place between baryons, you could say that the color force is the source of the strong interaction, or that the strong interaction is like a residual color force which extends beyond the proton or neutron to bind them together in a nucleus." The conclusion of this article is that only one fundamental force truly exists in the universe. Electromagnetism and the two nuclear forces are all gravitation wearing a brilliant disguise. Interaction of bosons (gravitons and photons) thus produces the bosons (gluons) which carry the strong force.

* The technicolour (or technicolor) force is the name given to the force between techniquarks – the hypothesized components of quarks which may bind together to form quarks in a similar way to quarks binding together to form hadrons (protons, neutrons and mesons). Not only could it be traced back to gravity but, like Einstein's "light quanta", technicolour (and techniquarks) could be traced to electronic 1s and 0s.

We've seen how gravity can form fermions like ultra-high-energy cosmic rays, and bosons like photons. The mass of supernova remnants and the forces associated with them could be "products of gravitational waves", too (in the light of the Nobel Prize for Physics 2013, it might be appropriate - in this instance - to refer to the gravitational field as the Higgs field). As ultra-high-energy cosmic rays travel back and forth over the edges of supernova remnants, they might in fact lose energy. The constant collisions with other particles make them slow down and become "ordinary" cosmic rays. Energies could decrease from the most energetic ray ever detected - 3x10^20 eV by the Fly's Eye detector in Utah, USA (in 1991) – to a "mere" 10^17 or 10^8 eV (electron volts).