The Successful Yet Highly Anthropic Cyclic Universe of E8 Symmetry Theory Updated: the Role of the 8 Supersymmetric Entities of Life

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Abstract: It has been about 10 months since I updated the cyclic universe E8 symmetry theory. Since the last update I have included supersymmetric top quark-antiquark effects and effects linking new cosmological data such as that of supermassive black holes, M-sigma galaxies, galaxies with “bars”, and gamma annihilation radiation from the center of our galaxy

The best starting point is the time just before the big bang, when unbroken E8 symmetry prevailed. At this time the universe was the smallest it could be because gravity was very active (particle velocities were not limited to c) but all matter was in the special-entity form of Briggs fermibosons[1], which had effectively zero mass, and no big crunch could take place. Instead, the universe bounced and later grew until it reached its present gigantic size while the Briggs fermibosons early disintegrated into dark energy (annihilated former top quark and top antiquark matter of supersymmetric origin which had annihilated in the epoch before the big bang) and fermionic, non-antimatteric ordinary matter stemming from the previous universe, and negative mc^2 dark matter[2] (H and Z bosons, also of supersymmetric origin, which were components of the Briggs fermibosons). After these bosons had done their job of bringing in fermions from the previous universe, the big bang occurred, breaking the E8 symmetry and causing the now redundant dark matter H bosons to form supermassive[3] black holes while the dark matter Z particles quadrupled in number, forming spiral galaxy “bars” each with two arms and producing 34 GEV gamma (H-Z) annihilation[4] radiation. The dark energy produced by annihilation of supersymmetric top quarks and top antiquarks just before the big bang caused a negative pressure effect in the universe, which we identify with expansion of the universe (not an inflation!).

E8 symmetry enters the story mainly in making possible the generation of negative energy bosons during the unbroken E8 symmetry epoch prior to the big bang and using these to shield ordinary fermions of matter from the previous universe (these fermions had no antiparticles) to form fermibosons: a lesser role for E8 symmetry was the generation of 248^5 different particles and antiparticles which make possible a wide variety of matter substances. Equally important is the 8-fold symmetry of life, or SU(3): This symmetry requires an expansion from 5 to 8 in the number of types of bosons, 4 massive, and 4 gauge zero mass type. The 4 massive bosons are unchanged - the Higgs, and the three weak: +W, -W, and the Z. The 4 zero mass gauge bosons are 2 unchanged (graviton and photon) and 2 new gauge bosons, which I have called the flataton and bigbangaton, responsible for 2 new forces of nature, spin 0/1 fermibosonic and big bang.

Thus overall we live with 2 new forces requiring 2 new zero-mass gauge bosons. Actually we need 3 forces, if one considers the spin 0/1 fermibosonic force as 2 separate forces but nature (E8 symmetry) is satisfied to make do with a single gauge boson for 2 forces just as she is happy with a similar arrangement for electromagnetism: in this case the two flataton forces are the spin 0 force of the Higgs boson and the spin 1 force of the Z weak particle, also a heavy boson.

The bigbangaton uses one new gauge boson. This new force provides a simultaneous big bang force throughout the universe. This caused the extraordinarily uniform temperature of the flash we see today and the low initial entropy of our universe. The energy for the flash came from annihilation of the two massive W+ and W-boson particles (each of positive mc^2). The last two zero mass type bosons are the photon (spin 1) and graviton (spin 2): these are unchanged in the new theory.

Finally, the 8-fold symmetry of life also made possible (separately) the strong force and the 8 primitive fermions: the neutron, up and down quark, the electron and their antiparticles.

The next part of the story came rather late in my work: the elimination of -H boson dark matter. Nature apparently had no further use for this matter after its use in shielding fermions from the previous universe to enable them to enter our universe without causing loss of "flatness". She utilized galaxies to gather up the used dark H bosonic matter in supermassive central black holes. -4H masses were swallowed in this way. The -4Z boson spin 1 dark matter used for the same purpose was not eliminated but was used again to form spiral galaxy "bars" and to "fertilize" galaxy spiral arm growth and also to double and quadruple the number of galaxy arms.

The next part of the story is the remarkable discovery of 8 fermibosons at the LHC[6], starting with the tH entity, and by the observation[7], first by the author, that these same type of fermibosons grew the universe after the big bang, except the bosons were of negative instead of positive mc^2 energy. We know this because the dark energy/dark matter ratio of the universe measured by astronomers checks within 6% with that calculated[8] using the latest LHC values for H, Z, and t masses and this would almost certainly not be true if the same 8 types of fermiboson were not under consideration, albeit of negative energy.

For example, the Z boson is familiar to us as a positive mc^2 heavy particle constituent of stars. E8 symmetry has used it again, but only when generated in the epoch when she was an unbroken symmetry before the big bang, in this case as a negative mc^2 particle. This 2^{nd} use is allowed in our epoch, but the negative energy mc^2 characteristic is hidden from us, hence the connotation "dark". It is noted that no new negative mc^2 matter can be generated in our epoch, but that that generated in the previous unbroken E8 symmetry epoch can be utilized in our broken-symmetry epoch also.

The last part of my story concerns incorporating an important work of others[9] in my theory: this is the observation that 34 GEV annihilation gamma radiation comes from the center of our galaxy. This is an amount of energy (68 GEV for 2 gamma rays) that, when 4 times added to the calculated dark energy of the universe, brings the agreement between the measured and calculated dark energy/dark matter ratio to within ½%. I noted that 136 GEV was the mc^2 energy of 4(H—Z) bosons. Since the starting number of supersymmetric particles was 8, ½(H-Z) represents an energy quantum per particle of the universe. Probably more importantly, the positive H-Z mc^2 energy could be eliminated in our epoch simply by using the same supermassive black holes formed earlier, causing them to reduce in size or even disappear as their negative matter cancelled the positive matter of the H-Z quantities.

Finally, I should mention that my theory provides a quick and easy answer[10] to why our universe (and all the others prior to it) contains no antimatter: initially the matter did contain top quark supersymmetry dark antimatter but all the supersymmetric dark matter-antimatter cleanly annihilated in the epoch before the big bang to become dark energy. At the beginning of our epoch the only fermions still left were those transferred from the previous epoch and these had no antimatter either.

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