The Universe Contracted Rapidly During the Epoch When E8 Was an Unbroken Symmetry Before the Big Bang

George R. Briggs

Abstract: In the epoch prior to the big bang E8 was an unbroken symmetry (see viXra 1405.0210) and both positive and negative intrinsic energy (mc^2) boson particles could be formed and combined with positive intrinsic energy leptons, hadrons and strong particles to form zero intrinsic energy fermibosonic entities which could carry matter from the previous universe without violating flatness requirements. Two new gauge bosons were needed (along with a third to enable the big bang) and these gauge bosons could produce attractive forces much stronger than the weaker force of our broken symmetry force of gravity. The period of time that the universe had unbroken symmetry could thus be relatively short compared to our epoch of broken E8 symmetry.

The symmetry E8 is the highest known[1] and is characterized as a Lie Group having only a single member with 248 representations. Its symmetry is so advanced that every gauge boson within its influence appears in two forms, one particle form with positive intrinsic energy (mc^2) and one particle form with negative intrinsic energy[2]. The negative energy particle form is unobservable to us directly because in our epoch E8 symmetry is broken by electromagnetism to E8 x U(1) by the big bang and unbroken E8 symmetry is necessary for the negative intrinsic energy particles to be produced and observed. In fact negative intrinsic energy matter has been detected in our universe as dark energy (a spin 0 boson form) and as dark matter (a spin 1 boson form). These two forms enabled hadrons and leptons of ordinary matter as well as massive bosons to be converted from the previous universe to our present universe without violating flatness. This was accomplished via two non-quantum fermibosonic entities of unbroken E8 symmetry (see viXra 1310.0261).

The two forms of fermibosonic entity were forged by two new attractive forces and associated gauge bosons that were produced in the epoch before the big bang. In addition, another new attractive force associated gauge boson was activated in this epoch also to produce a universe-wide annihilation event between already-existing W+ and W- particles which we call the big bang and this was activated by the electromagnetic breaking of the E8 perfect symmetry then existing before the big bang. The two new attractive forces could be many orders stronger than ordinary gravity.

The 3 new gauge bosons thus join the 5 already known (photon, W+, W-, Zo, and graviton) to form a representation number of 8, an indication that SU(3) symmetry is at work here, as also for life itself and the strong force (this last allowing atoms of many types, leading to complex chemistry). Eight is also the number of stable fundamental

particles and their antiparticles produced initially in our universe. The next step up in representation number after 8 is 248 for E8 symmetry and this has been found to be the total number of different quantum particles, both stable and unstable, found to date[3].

In some epoch in the future our universe will become so cold. dark, and large that life will end everywhere and will need to be rejuvenated. This can be done by restoring conditions for life, and this will require an epoch of unbroken E8 symmetry again, to shrink and re-energize the universe and to cleanse its matter by reducing its metallicity. These actions will reset the size and entropy of the universe as a system to an original low value. The size of the universe will rapidly reduce because of the three attractive, strong, new forces now under unbroken E8 symmetry. Cosmic speeds will not be limited to c and the entropy will be reduced because the hadronic complexity is reduced. The resulting steady-state cyclic action of the universe (in size, in conditions for life, in entropy etc.) has many features[4].

1. A. Garrett Lisi and James Owen Weatherall, “A Geometric Theory of Everything”, pp. 54-61, Scientific American, Dec. (2010)

2. Dan Hooper, “Dark Cosmos”, p. 91, Collins, (2006)

3. A. Garrett Lisi, “An Exceptionally Simple Theory of Everything”, Wikipedia, (2007)

4. Roger Penrose, “Cycles of Time”, Alfred A. Knopf (2011)