Atiyah Constant excludes the Multiverse Hypothesis and confirm Eddington's and Superstring Theories

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A simple fine tuning relation using the Atiyah Constant, the Eddington number 137 and the Fermi coupling constant defines the latter in its 5×10^{-7} indetermination, compatible with the 2×10^{-8} muon mass indetermination in another Cosmic Oscillation fine tuning relation. A symmetrical extension showing superstring 6D and 9D spaces gives a G value compatible with the Quinn measurement (2.5×10^{-5}), and the Coherent Cosmology value (10^{-7}), showing the superstring reduction from 9D to 3D. This confirms Atiyah's claims about Eddington rehabilitation and the exclusion of the Multiverse hypothesis.

In a recent Conference [1], Michael Atiyah claimed that the first order value of the electrical constant *a* is the series 1 + 8 + 128 = 137, rehabilitating the Eddington's value 137. In fact this number 137 has a more fundamental property : it appears as a Monster in the series of the maximal primes appearing in the numerator of the harmonic series : 3,11,5,137,7,11, showing a symmetry beween the 11 supergravity dimensions and the 4 of space-time:

$$137 = 11^2 + 4^2$$

Since Riemann series are studied for their ability to describe the prime number distribution, it is strange that mathematicians have not point out the primes appearing in the Harmonic series, since it is the single pole. It seems that the basic precept '*all occur in the pole*' was forgotten in this case.

Moreover, Atiyah argues that the constant defined by:

$$\Gamma = \gamma a / \pi \approx 25.17809725$$

would help the heavy QED calculations. *This leads presently to an intense polemics, a majority of theoreticians arguing that Atiyah, like Eddington, is becoming a crackpot with age*. The present Letter settles the debate. Indeed a simple computer study shows immediately that 137 and Γ enter the relation:

$$G_F / m_e c^2 \approx (\lambda_e / 137 \times 2\Gamma)^3$$

where $\lambda_e \equiv \hbar / m_e c$ is the reduced electron radius, and $G_F \equiv (\hbar c)^3 / E_F^2 \approx 1.4358509(7) \times 10^{-62}$ Joule × m^3 is the Fermi coupling constant, corresponding to the Fermi energy $E_F \approx 292.806161(6)$ GeV $\approx 573007.33(25)$ $m_e c^2$ [2].

Since the Weinberg-Salam electroweak theory unifies electricity, characterized by *a,* and weak nuclear force characterized by G_F, a so precise relation (5×10^{-7}) shows that an Eddingtonian bridge exists between Atiyah approach and the electroweak theory. Admitting the above relation, this defines $F = E_F / m_e c^2 \approx 573007.3652$, inside its $2.5\ 10^{-7}$ indetermination. Now the latter enters another fine tuning relation, induced by the Kotov Coherent Cosmic Oscillation [3], implying the muon, proton and Hydrogen masses: $E_F / m_e c^2 \approx m_\mu^2 \sqrt{(m_p m_H)} / a m_e^3$. This corresponds to a muon mass 206.7682869 m_e, inside its 2×10^{-8} measurement range. The a-priori probability of such correlations are estimated, by looking for the number of solutions obtained by extending the indetermination range by a factor 10^6, keeping a maximal exponent to 3, to be respectively 2×10^{-5} and 10^{-6}.

Atiyah announced that analysis extension from quaternions to octonions could precise the *G* value. Now, the three first terms of the Combinatorial Hierarchy [4] are the Mersenne numbers 3, 7, 127, whose sum is 137, so giving in a different way the above first order of the electrical constant.

The advantage of this procedure is that the following (final) term 2^{127}-1 gives the first order of the gravitational coupling, whose optimal form results from the gravitational Hydrogen molecule model [5] $a_G = \hbar c/Gm_p m_H$. Computer analysis shows that the most symmetrical expression for the deviation is, with n the neutron/electron mass ratio:

$$(2^{127}/a_G)^{1/2} \approx (a/\pi)(nF/137^2\Gamma^3)^{-3} \approx (a/\pi)((4n/\Gamma)^3/F)^{-1}$$

exhibiting Atiyah's symmetry between a and π. Apart the natural 3D term, the powers 6 and 9 would means that 6D and 9D dimensions are implied, which, by elimination of 137, reduce to 3D confirming superstring theory. This corresponds to:

$$G \approx 6.6754538 \times 10^{-11} \ \text{kg}^{-1}\text{m}^3\text{s}^{-2}$$

very close (10^{-7}) to the optimal value deduced from Coherent Cosmology [5], and compatible with the very elaborate BIPM measurement [6], in its 2.5×10^{-5} indetermination. This is at several sigmas from the tabulated Codata value, which results unwisely from a mean between discordant measurements.

These are striking examples of the extreme precision of the fine tuning between physical parameters, to be compared with the large imprecision of Anthropic Principle arguments. This confirms Atiyah's view in favor of a Single Final Theory, refuting the Multiverse hypothesis.

References
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