

Electrical Moonshine

Francis M. Sanchez

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Abstract. The electrical constant a and its Eddington approximation 137 are both 10 ppb connected with the dimension $d = 26$ of bosonic string theory and the 'moonshine entropy' $\ln D$. Direct connection between a , 137, d and $D = 196883$, reveals the string central number 496, about the 20th root of the Monster order, whose square corresponds to 125.6 GeV (BEH Boson). This confirms the arithmetical character of Physical laws.

A bridge was established between two very different mathematical domains : the group theory and the conformal field one, which is related to the string theory [1]. The starting common point is the order of the Monster group $D = 196883$. In its treatment of the bosonic string theory, of dimension $d = 26$, Witten [2] considers the corresponding entropy $\ln D$, and compare it with the natural term 4π . But there are two 10^{-8} precise relations implying 137 and the electric constant [3] $a \approx 137.035999138(31)$.

$$6d \ln D \approx (137/\pi_1)^2 \approx (a/\pi)^2 - 1$$

π_1 being the classical approximation $355/113$, *confirming the arithmetical character* of Physics revealed by the Monster Group [4], Topological Axis [5], and the Eddington number 137 [6][7].

Detailed analysis shows that, in the ppb range :

$$D = 12d(136 + 495 - 1) + 11 \approx 12d(a + 496 - 2) - \sin^2_{\theta}$$

where $\sin^2_{\theta} \approx 0.23129(5)$ is the weak-mixing angle [3] and 496 the third perfect number, central in string theory [8], and very close to the 20th root of the Monster order, whose square corresponds, by respect to the electron energy, to 125.6 GeV, nearly compatible with the BEH mass 125.09(24) GeV [3].

References

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