Relation of anomalous magnetic dipole moments of leptons

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Abstract: The relation of anomalous magnetic dipole moments of three charged leptons is assumed.

Key words: Bošković, ***moment***, lepton

Moments

Let's apply the known dimensionless value: $\boldsymbol{a = 1/(2\pi\acute{\alpha})}$ = 0, 00116140973
Where $\boldsymbol{\acute{\alpha}}$ = 137.035999084 is the inverse fine structure constant.

Let us perform the following transformation on the anomalous magnetic dipole moment of the charged leptons to obtain the values, $\boldsymbol{x_i}$:

$$\boldsymbol{x_i = 1 / (a / a_i - 1),\ \ i = (1, 2, 3)} \qquad (1)$$

Where: $\boldsymbol{a_i}$ is the anomalous magnetic dipole moment for the first, second and third generations, i.e.: Electron, Muon and Tau particle, [2]

With intuition and more with understanding [1] we get:

$$\boldsymbol{2*(x_2 + x_3) \approx 1 - x_1} \qquad (2)$$

Shown in:

Table

	$a = 1 / (2\pi*\acute{\alpha}) =$	**0,001161409733**	***moment***
$i / \acute{\alpha}$	**137,035999084**	a_i	$x_i = 1 / (a / a_i - 1)$
1	**El. 0,00115965218076(27)**	**0,00115965218076**	**-660,81097442149**
2	**Muon 0,00116592091 (63)**	**0,00116592091**	**257,451592677528**
3	**Tau 0,00117721 (5)**	**0,00117722**	**73,4538945332408**
		$2 * (x_2 + x_3) - 1 =$	**660,81097442154**

Assuming the accuracy of (2), the least known input data is for Tau, so let's calculate:

$$\boldsymbol{x_3 = (1 - x_1) / 2 - x_2} \qquad (3)$$

That is, by applying (1) and arranging, we get:

$$\boldsymbol{a_3 = a * (1 + 1/ ((1 - 1/ (a_1/a - 1))/2 - 1 / (a_2/a - 1))) = 0,\ 00117722114} \qquad (4)$$

This is probably approximate because we didn’t take into account other influences that are most likely from Proton and W boson with a small correction in (2), for example for a proton it is, x_4:

i		a_i	$x_4 = 1 / (a / a_i - 1)$
4	**Proton**	**1,79284735650**	**0,000648222**

So, when that term is also included in (3), the correction for x_3 is obtained and then the difference for the value of a_3 to the tenth decimal place compared to the calculation without proton.

A special symmetry can be seen from the previous formulas, so in (4) we can replace the places with indices 2 and 3 and get:

$$a_2 = a * (1 + 1/ ((1 - 1/ (a_1/a - 1))/2 - 1 / (a_3/a - 1))) = 0,\ 00116592091 \quad (5)$$

From this symmetry, we can classify particles differently and say that: we have one member of the primary and two members of the secondary generation.

The transformation, (1) only made the calculation easier: then everything was returned to anomalous magnetic dipole moments.

It is to be expected that a similar transformation can be used for ***up*** types and for ***down*** types of quarks for which no measured data are available to me.

Conclusion

• The ratio of anomalous magnetic dipole moments of three charged leptons was determined, using Ruđer Bošković's Theory.

• Of course, it would be best to use [1] to determine the value for the electron, which I did not do, and which is considered: "*the magnetic moment of the electron the most accurately verified prediction in the history of physics*", [2], with which I'm not familiar with it.

References:

[1] Boscovich J. R.: (a) "Theoria philosophia naturalis redacta ad unicam legem virium in natura existentium", first (Wien, 1758) and second (Venetiis, 1763) edition in Latin language; (b) "A Theory of Natural Philosophy", in English, The M.I.T. Press, Massachusetts Institute of Technology, Cambridge, Massachusetts and London, England, first edition 1922, second edition 1966.

[2] https://en.wikipedia.org/wiki/Anomalous_magnetic_dipole_moment