Anomalous Magnetic Moment Formula of the Muon

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Abstract: We find a very simple formula for calculating the anomalous magnetic moment of muon. It has only the mass ratio of muon to electron and the fine structure constant, and its calculated results are in good agreement with the experimental measurements. We obtain that the anomalous magnetic moment of muon is $a_\mu = 0.001165920756$.

Introduction: Our formula is as follows:

$$a_\mu = \frac{\alpha}{2\pi}\left(1 - \frac{4}{5}\frac{m_e}{m_\mu}\right)^{-1} \tag{1}$$

where: a_μ is the anomalous magnetic moment of the muon; α is the fine structure constant; m_e is the mass of the electron; m_μ is the mass of the muon; π is the Pi.

The result calculated from equation (1) is: $a_\mu = 0.001165920756$.
The latest measurement value is [1]: $a_\mu = 0.001165920715$.

Equation (1) is rsimple, without any complex correction term, it is just a simple relationship composed of several physical constants, but the results obtained by it are compared with the latest experimental values, and it can be found that they are coincident and surprising.

Reference:
[1] arXiv:2506.03069v1 [hep-ex]