

anomaly freedom

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To check if I have correctly understood the formulas for anomaly freedom.

The extension $U(3)_c \times SU(2)_L \times U(1)_{EM}$ of the SM, where we have added the diagonal of $SU(3)_c$ with baryon charge I_B is anomalous, because we have a AVV term

$$\text{tr}(I_B(\tau^3 Q + Q \tau^3)) \sim \text{tr } I_B \neq 0.$$

But if we omit the EM field, leaving $U(3)_c \times SU(2)_L$, we have, again, anomaly freedom, despite $\text{tr } I_B \neq 0$.

Correct?

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