

場の量子論 p168check6.7

谷脇 貞善

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$$\gamma_W^5 = \begin{pmatrix} I_2 & 0 \\ 0 & -I_2 \end{pmatrix}, \quad P_R = \frac{1}{2}(I_4 + \gamma_W^5) = \begin{pmatrix} I_2 & 0 \\ 0 & 0 \end{pmatrix}, \quad P_L = \frac{1}{2}(I_4 - \gamma_W^5) = \begin{pmatrix} 0 & 0 \\ 0 & I_2 \end{pmatrix} \quad (1)$$

$$P_R + P_L = I_4, \quad (P_R)^2 = P_R, \quad (P_L)^2 = P_L, \quad P_R P_L = P_L P_R = 0 \quad (2)$$

$$P_R \gamma_W^5 = \gamma_W^5 P_R = P_R, \quad P_L \gamma_W^5 = \gamma_W^5 P_L = -P_L \quad (3)$$

$$\gamma_W^5 \psi_R = \psi_R, \quad \psi_R = P_R \psi = \frac{1}{2}(I_4 + \gamma_W^5) \psi \quad (4)$$

$$\gamma_W^5 \psi_L = -\psi_L, \quad \psi_L = P_L \psi = \frac{1}{2}(I_4 - \gamma_W^5) \psi \quad (5)$$

$$\gamma_W^\mu P_R = \gamma_W^\mu \frac{1}{2}(I_4 + \gamma_W^5) = \frac{1}{2}(I_4 - \gamma_W^5) \gamma_W^\mu = P_L \gamma_W^\mu \quad (6)$$

$$\gamma_W^\mu P_L = \gamma_W^\mu \frac{1}{2}(I_4 - \gamma_W^5) = \frac{1}{2}(I_4 + \gamma_W^5) \gamma_W^\mu = P_R \gamma_W^\mu \quad (7)$$

参考文献

- [1] 坂本眞人著「場の量子論-不変性と自由場を中心にして」(裳華房,2014,ISBN9784785325114)