$$\{Q_1, \overline{Q}_1\} = 2(\sigma_{11}^0 P_0 + \sigma_{11}^1 P_1 + \sigma_{11}^2 P_2 + \sigma_{11}^3 P_3) = 2(P_0 + P_3)$$

$$\{Q_2, \overline{Q}_2\} = 2(\sigma_{22}^0 P_0 + \sigma_{22}^1 P_1 + \sigma_{22}^2 P_2 + \sigma_{22}^3 P_3) = 2(P_0 - P_3)$$