of the choice of $\delta_o \in H_o$ since

$$\alpha \in K, \quad \beta \in K^* \Rightarrow \rho^{4i} \alpha \in K, \quad \rho^{4i} \beta \in K^*$$

for every i. Furthermore the numbers of solutions of (7.0) and (7.3) are equal to each other because $\alpha \in K \Rightarrow \beta = \alpha \rho^3 \in K^*$ and $\beta \in K^* \Rightarrow \rho^{-3} \beta = \alpha \in K$. Similarly the numbers of solutions of (7.1) ans (7.2) are equal because

$$\beta \in K^* \Rightarrow \rho\beta^* \in K .$$

Finally (7.0) and (7.2) have the same number of solutions because

$$\alpha \in K \Rightarrow -\rho^2 \alpha \in K .$$

By the same argument it can be shown that the number of solutions of each of the equations

$$\delta_0 = \beta_1 - \beta_2 \tag{8.0}$$

$$\rho\delta_0 = \alpha_1 - \alpha_2 \tag{8.1}$$

$$\rho^2 \delta_0 = \beta_1 - \beta_2 \tag{8.2}$$

$$\rho^3 \delta_0 = \alpha_1 - \alpha_2 \tag{8.3}$$

is the same. Hence for each $\delta \neq 0$ the total number of solutions of

$$\delta = \alpha_1 - \alpha_2 , \qquad \delta = \beta_1 - \beta_2$$

is the same number μ. Therefore $\mu (q-1) = 2\mu m$ is equal to the total number of expressions $\alpha_1 - \alpha_2$, $\beta_1 - \beta_2$, i.e. to $2m (m-1)$, giving $\mu = m-1$ as required.

REFERENCES

[1] Paley, R. E. A. C., On orthogonal matrices. *J. Math. Phys.*, *12* (1933), pp. 311-320.
[2] Ryser, H. J., Combinatorial Mathematics. *Carus Mathematical Monographs*, No. 14.
[3] Szekeres, E. and G., On a problem of Schütte and Erdös. *Math. Gazette*, *49* (1965), pp. 290-293.
[4] Todd, J. A., A combinatorial problem. *J. Math. Phys.*, *12* (1933), pp. 321-333.
[5] Johnsen, E. J., Integral Solutions to the incidence Equation for finite projective plane cases of orders $n \equiv 2$ (mod. 4). *Pacific J. Math.*, *17* (1966), pp. 97-120.

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