

$$\epsilon_{1,2,3,4,5} = 2^4 \cdot \left(-\frac{4}{16}\right)^5 = -\frac{1}{64}$$

ROUND 1)

$$\begin{aligned} V_{1,2} \oplus V_{1,4} &= U_{1,2} \\ &= P_2 \oplus K_{1,2} \end{aligned} \quad \text{BIAS} = -\frac{1}{4}$$

$$\begin{aligned} V_{1,14} \oplus V_{1,16} &= U_{1,14} \\ &= P_{14} \oplus K_{1,14} \end{aligned} \quad \text{BIAS} = -\frac{1}{4}$$

ROUND 2)

$$\begin{aligned} V_{2,5} &= U_{2,5} \oplus U_{2,8} \\ &= (V_{1,2} \oplus K_{2,5}) \oplus (V_{1,14} \oplus K_{2,8}) \end{aligned} \quad \text{BIAS} = -\frac{1}{4}$$

$$\begin{aligned} V_{2,13} &= U_{2,13} \oplus U_{2,16} \\ &= (V_{1,4} \oplus K_{2,13}) \oplus (V_{1,16} \oplus K_{2,16}) \end{aligned} \quad \text{BIAS} = -\frac{1}{4}$$

ROUND 3)

$$\begin{aligned} V_{3,1} \oplus V_{3,3} &= U_{3,2} \oplus U_{3,4} \\ &= (V_{2,5} \oplus K_{3,2}) \oplus (V_{2,13} \oplus K_{3,4}) \end{aligned} \quad \text{BIAS} = -\frac{1}{4}$$

$$V_{3,1} \oplus V_{3,3} \oplus V_{2,5} \oplus K_{3,2} \oplus V_{2,13} \oplus K_{3,4} = 0$$

$$V_{3,1} \oplus V_{3,3} \oplus P_2 \oplus P_{14} \oplus K_{1,2} \oplus K_{1,14} \oplus K_{2,5} \oplus K_{2,8} \oplus K_{2,13} \oplus K_{2,16} \oplus K_{3,2} \oplus K_{3,4} = 0$$

$$U_{4,1} \oplus U_{4,9} \oplus P_2 \oplus P_{14} \oplus \sum K = 0$$

$$\sum K = K_{1,2} \oplus K_{1,14} \oplus K_{2,5} \oplus K_{2,8} \oplus K_{2,13} \oplus K_{2,16} \oplus K_{3,2} \oplus K_{3,4} \oplus K_{4,1} \oplus K_{4,9}$$