Error correction redundancy

→ 31

→ you have 3 rotors and 3 spots to put them

[3] [2] [1]

31 ways = 6

→ rotor settings

[26] [26] [26]

$(26)^3 = 17576$

26 letters

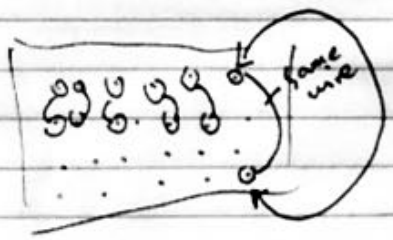
~~choose~~ 1 wire

$\frac{26 \times 25}{2}$

26C2

$\frac{26!}{(26-2)!\,2!}$

$\frac{26!}{24!\,2!} = \frac{26 \times 25}{2}$



→ you have 6 wires to map letters

Z ← A → 25

Y ← B → 24

X ← → 23

W ← → 22

V ← → 21

U ← → 20

$(25 \times 24 \times 23)^{\frac{2!}{4!}}$

$\frac{25! \times 26!}{19!\ 6!}$

150,738,274,937,250

$\frac{26}{13}$

AZ BY CX DW EV FU

$\frac{26 \times 25}{2!}$ $\frac{24 \times 23}{2!}$ $\frac{22 \times 21}{2!}$ $\frac{20 \times 19}{2!}$ $\frac{18 \times 17}{2!}$ $\frac{16 \times 15}{2!}$ ✓

$\frac{1}{6!}$

$26C13 = 9{,}657{,}700$

✓ $\frac{26 \times 25}{2} \times \frac{24 \times 23}{2} \times \frac{1}{2}$

✓ $\frac{26!}{19! \times (2!)^3 \times 6!}$

all wires are the same

✓ $\frac{26 \times 25}{2} \times \frac{24 \times 23}{2} \times \frac{22 \times 21}{2} \times \frac{1}{3!}$

$\frac{26!}{20!\,2^4 \times 4!}$ $\frac{26 \times 25}{2} \times \frac{24 \times 23}{2} \times \frac{22 \times 21}{2} \times \frac{20 \times 19}{2} \times \frac{1}{4!}$ ✓