$$(1-P)*(1-P) \quad = \quad (1-P)^2$$

$$(1-P)^N$$

$$(1-0.000046)^N = 0.50$$

$$\text{Prob of N successive heads} \quad = \quad \left(\frac{1}{2}\right)^N \quad = \quad 0.5^N$$

$$\text{Number of streaks of length} \geq N \quad = \quad K \, * \, 10^{-0.109N}$$

$$10^{-0.109*1} \quad = \quad 0.778$$

$$10^{-0.109*5} \quad = \quad 0.285$$

$$\chi^2 \quad = \quad \frac{(R-S)^2}{R+S}$$

$$\chi^2 \quad = \quad \sum_i \frac{(R_i-S_i)^2}{R_i+S_i}$$