

Probability and Statistics

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Section 5.1

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补充 1

$$\begin{aligned}E(X - Y) &= E(X) - E(Y) \\&= 2 - 2 \\&= 0 \\D(X - Y) &= D(X) + D(Y) - 2Cov(X, Y) \\&= D(X) + D(Y) - 2\rho_{XY}\sqrt{D(X)}\sqrt{D(Y)} \\&= 1 + 4 - 2 \times 0.5 \times 1 \times 2 \\&= 3\end{aligned}$$

由切比雪夫不等式有

$$\begin{aligned}P(|X - Y| \geq 6) &\leq \frac{D(X - Y)}{6^2} \\&= \frac{1}{12}\end{aligned}$$

补充 2

设每次掷骰子的结果为 X , 则 $E(X) = 3.5$, $D(X) = \frac{35}{12}$ 。则算数平均值的依概率收敛的极限为

$$\lim_{n \rightarrow \infty} \frac{X_1 + X_2 + \cdots + X_n}{n} = E(X) = 3.5$$