

Suppose that $\{X_i\}_{i=1}^\infty$ are random variables such that $\sum_{i=1}^\infty X_i$ is almost surely convergent. Suppose further that $|\sum_{i=1}^n X_i|$ is uniformly bounded in n and ω . Show that

$$\mathbb{E} \left[\sum_{i=1}^{\infty} X_i \right] = \sum_{i=1}^{\infty} \mathbb{E}[X_i].$$