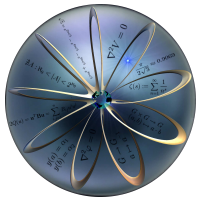

planetmath.org

Math for the people, by the people.

Kolmogorov's strong law of large numbers

Canonical name	KolmogorovsStrongLawOfLargeNumbers
Date of creation	2013-03-22 13:13:12
Last modified on	2013-03-22 13:13:12
Owner	Koro (127)
Last modified by	Koro (127)
Numerical id	7
Author	Koro (127)
Entry type	Theorem
Classification	msc 60F15
Synonym	Kolmogorov's criterion
Related topic	MartingaleProofOfKolmogorovsStrongLawForSquareIntegrableVariables
Related topic	ProofOfKolmogorovsStrongLawForIIDRandomVariables

Let $X_1, X_2, \ldots$ be a sequence of independent random variables, with finite expectations. The strong law of large numbers holds if one of the following conditions is satisfied:

1. The random variables are identically distributed;

2. For each n, the variance of X_n is finite, and

$$\sum_{n=1}^{\infty} \frac{\mathrm{Var}[X_n]}{n^2} < \infty.$$