



SDI Review Form 1.6

Journal Name:	British Journal of Mathematics & Computer Science
Manuscript Number:	2015_BJMCS_17980
Title of the Manuscript:	The law of large numbers. A multicriterial analysis
Type of the Article	Original Research Article

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	Law of large numbers is obtained for a series of events depending on an increasing number of random factors. Multicriterial analysis is studied. It is well written .	Thank you
Minor REVISION comments	Expectation notation should be replaced from M to E. because constant M is used for the limit. variance notataion D^2 should be replaced by Var.	I replaced as you asked. Yes it is a good observation. Now that I took a look again on the article, I can see that it can be confound the expectation with the limit. The notation for variance notation with D^2 and not with Var I don't think that it is a mistake. I modified also that. Theorem1.¹ Let $(Y_n)_{n \in \mathbb{N}^*}$ be a string of random variables and mean values and finite variances $E[Y_n] = E_n < \infty, \quad Var[Y_n] = \sigma_n^2 < \infty.$ If there exist a constant M such that $\lim_{n \rightarrow \infty} E_n = M$ and $\lim_{n \rightarrow \infty} \sigma_n^2 = 0$ (1) then $\{Y_n\} \xrightarrow{p} M.$ Demonstration We observe that for any $\varepsilon > 0$ $\{ Y_n - M > \varepsilon\} \subseteq \{ Y_n - M_n > \frac{\varepsilon}{2}\} \cup \{ M_n - M > \frac{\varepsilon}{2}\}.$ we can write

¹ [9]



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		$P(\{ Y_n - M > \varepsilon\}) \leq P\left(\left\{ Y_n - M_n > \frac{\varepsilon}{2}\right\}\right) + P\left(\left\{ M_n - M > \frac{\varepsilon}{2}\right\}\right). \quad (2)$ Applying random variable Y_n on Cebâşev's inequality we obtain $P(\{ Y_n - M > \varepsilon\}) \leq \frac{\text{Var}[Y_n]}{\varepsilon^2} = \frac{\sigma_n^2}{\varepsilon^2}. \quad (3)$ Since $\lim_{n \rightarrow \infty} E_n = M$ It results that $\forall \varepsilon > 0, \exists N(\varepsilon) \in \mathbb{N}$ such that $\forall n \geq N(\varepsilon)$ the inequality $E_n - M > \frac{\varepsilon}{2}$ becomes impossible, ie $\forall n \geq N(\varepsilon): P(\{ E_n - M > \varepsilon\}) = 0.$ Passing to the limit in (2), taking into account of (3) and the ipothesis (1) it results that $\lim_{n \rightarrow \infty} P(\{ Y_n - M > \varepsilon\}) = 0.$... I modified in all the theorems and demonstrations, of course. You can verify that in the revised article. I didn't put all of them in this table.
<u>Optional/General</u> comments		