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A note on convergence to stationarity of random processes with immigration. (English)

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[Theory Stoch. Process.](#) 20, No. 1, 84-100 (2015).

Summary: Let X_1, X_2, \dots be random elements of the Skorokhod space $D(\mathbb{R})$ and ξ_1, ξ_2, \dots be positive random variables such that the pairs $(X_1, \xi_1), (X_2, \xi_2), \dots$ are independent and identically distributed. The random process $Y(t) := \sum_{k \geq 0} X_{k+1}(t - \xi_1 - \dots - \xi_k) \mathbb{I}_{\xi_1 + \dots + \xi_k \leq t}$, $t \in \mathbb{R}$, is called random process with immigration at the epochs of a renewal process. Assuming that the distribution of ξ_1 is nonlattice and has finite mean while the process X_1 decays sufficiently fast, we prove weak convergence of $(Y(u+t))_{u \in \mathbb{R}}$ as $t \rightarrow \infty$ on $D(\mathbb{R})$ endowed with the J_1 -topology.

MSC:

[60F05](#) Central limit and other weak theorems

[60K05](#) Renewal theory

Cited in **4** Documents

Keywords:

[random marked point process](#); [renewal shot noise process](#); [stationary renewal process](#); [weak convergence](#); [Skorokhod space](#); [processes with immigration](#)