This is a review submitted to Mathematical Reviews/MathSciNet.

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Title: Renewal sequences with periodic dynamics.

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Review text:

The paper proposes an extension of the classical renewal process model on the integers to one where inter-renewal intervals depend on the "season" at which renewal occurs. Specifically, there are T seasons occurring periodically over positive integers. There are also T positive random variables $L_1, \ldots, L_T$. If there is a renewal at time n, then the next renewal will take place at time $n + L_{s(n)}$, where $s(n)$ is the season of n and $L_{s(n)}$ is chosen independently of previous renewals. The point process thus obtained does not have independent inter-renewal times. However, several questions can be answered: For example, if we let A_n be the distance between n and the first renewal before n, then $\{A_n\}$ is a time-inhomogeneous Markov chain which, under certain conditions, possesses T weakly convergent subsequences to computable probability measures called, say, $\{\pi_k(1)\}_{k\geq 0}, \ldots, \{\pi_k(T)\}_{k\geq 0}$, in terms of the distributions of $L_1, \ldots, L_T$. As another example, the authors ask (and answer) the question of how the first renewal should be distributed so that the renewal process is periodic (in distribution). Finally, the results are used to construct a time series model for a periodically stationary sequence of integer counts.