Brown, Timothy C.; **Kupka, Joseph**
Ramsey's theorem and Poisson random measures. (English) Zbl 0533.60057
Ann. Probab. 11, 904-908 (1983).

Let N be a random point process defined on a δ-ring $\mathcal{D}$ of subsets of a measurable space and suppose that N has independent increments: whereas $D_1, ..., D_k \in \mathcal{D}$ are disjoint the random variables $N(D_1), ..., N(D_k)$ are independent. Define a set $D \in \mathcal{D}$ to be small with respect to N if $N(D) = 0$ a.s. *A. Prékopa* [Ann. Univ. Sci. Budap. Rolando Eötvös, Sect. Math. 1, 153-170 (1958; Zbl 0089.340)] showed that if singletons belong to $\mathcal{D}$ and are small then necessarily N is a Poisson point process. The authors of this paper obtain the same conclusions under the formally weaker condition that for each $D \in \mathcal{D}$ there exist a countable subfamily $\mathcal{B}$ of $\mathcal{D}$ such that $D \subset U\{B : B \in \mathcal{B}\}$ and for each $x \in D$, $\cap\{B \in \mathcal{B} : x \in B\}$ is small. Their method of proof is based on appeal to Ramsey's theorem in combinatorial analysis.

Reviewer: A.Karr

MSC:

60G57 Random measures
05C55 Generalized Ramsey theory
60G55 Point processes (e.g., Poisson, Cox, Hawkes processes)

Keywords:

Poisson process; Ramsey theorem; independent increments

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