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About Thinning Invariant Partition Structures

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Bernoulli-p thinning has been well-studied for point processes. Here we consider three other cases: (1) sequences $(X_1, X_2, ...)$; (2) gaps of such sequences $(X_{n+1} - X_1)_{n \in \mathbb{N}}$; (3) partition structures. For the first case we characterize the distributions which are simultaneously invariant under Bernoulli-p thinning for all $p \in (0,1]$. Based on this, we make conjectures for the latter two cases, and provide a potential approach for proof. We explain the relation to spin glasses, which is complementary to important previous work of Aizenman and Ruzmaikina, Arguin, and Shkolnikov.

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