

Binary sequential representations of random partitions

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Random partitions can be thought of as a consistent family of exchangeable random partitions of the sets $\{1, 2, \dots, n\}$ for $n \geq 1$. Historically, random partitions were constructed by sampling an infinite population of types and partitioning individuals of the same type into a single class. A particularly tractable way to construct random partitions is via random sequences of 0s and 1s. The only random partition derived from an independent 0–1 sequence is Ewens' one-parameter family of partitions which plays a predominant role in population genetics. A two-parameter generalization of Ewens' partition is obtained by considering random partitions constructed from discrete renewal processes and introducing a convolution-type product on 0–1 sequences.

Keywords: combinatorial probability; combinatorial stochastic process; exchangeable; random partition; sequential construction