Sample Duality

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Abstract

Heuristically, two processes are dual if one can find a function to study one process by using the other. Sampling duality is a duality which uses a duality function $S(n, x)$ of the form "what is the probability that all the members of a sample of size n are of a certain type, given that the number (or frequency) of that type of individuals is x".

Implicitly, this technique can be traced back to the work of Blaise Pascal. Explicitly, it was studied in a paper of Martin Möhle in 1999 in the context of population genetics. We will discuss examples for which this technique proves to be useful, including applications to the Simple Exclusion Process and (work in progress) a universality result for the FKPP equation.

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[*]Punctual, i.e. sine tempore!