The weak law of large numbers and the St. Petersburg game

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Abstract

The law of large numbers is (one of) the most fundamental results in probability theory. In this talk we discuss the weak law of large numbers when the mean is infinite (and, hence, no strong law holds), and present a generalization which is well suited for the St. Petersburg game.

As already hinted at, there is no strong law. Moreover, convergence in distribution fails. However, a result, due to Martin-Löf, tells us that one has convergence in distribution along the geometric subsequence $2^n$ to an infinitely divisible, semistable law.

We finally mention some joint work with Anders-Martin Löf concerning

- trimmed St. Petersburg games and
- an extension to unfair coins with a more general payoff.