

The maximum average in an infinite sequence of Bernoulli games,  
a paper by Wolfgang Stadje

Let  $X_1, X_2, \dots$  be independent identically distributed Bernoulli random variables with support  $\{1, -1\}$ . Set  $S_n = X_1 + \dots + X_n$ . Aspects of the distribution of the maximum value of  $S_n/n$  will be described using the complex roots of certain polynomials. The problem addressed is not new. Indeed, a decades-old result of Sparre Andersen gives a formula for the distribution of the sum, but that formula is quite cumbersome to use.