Pairings on bit strings

Eva Yuping Deng Dalian University of Technology

A pairing on the set $\{(10)^n\} = \{1,0,1,0\cdots,1,0\}$ is a collection of n pairs with the property that each 1 must pair to a 0. It is known that the number of noncrossing pairings on bit strings $\{(10)^n\}$ is equal to the n-th Catalan numbers $c_n = \frac{1}{n+1}\binom{2n}{n}$. In this paper, we study the crossings and nestings of pairings on bit strings. We construct a bijection between pairings and labeled Dyck paths. From the bijection, we obtain the symmetric distribution of crossings and nestings for parings.