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Expected Patterns in Permutation Classes

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(Submitted on 1 Jun 2012 (v1), last revised 12 Jul 2012 (this version, v2))

In the set of all patterns in S_n, it is clear that each k-pattern occurs equally often. If we instead restrict to the class of permutations avoiding a specific pattern, the situation quickly becomes more interesting. Mikl\'os B\'ona recently proved that, surprisingly, if we consider the class of permutations avoiding the pattern 132, all other non-monotone patterns of length 3 are equally common. In this paper we examine the class $\Av (123)$, and give exact formula for the occurrences of each length 3 pattern. While this class does not break down as nicely as $\Av (132)$, we find some interesting similarities between the two and prove that the number of 231 patterns is the same in each.

Submission history

From: Cheyne Homberger [view email]

[v1] Fri, 1 Jun 2012 22:19:37 GMT (11kb)

[v2] Thu, 12 Jul 2012 15:20:47 GMT (11kb)

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