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*Enumerating Anchored Permutations with Bounded Gaps.*

Say that a permutation of  $1, 2, \dots, n$  is *k-bounded* if every pair of consecutive entries in the permutation differs by no more than  $k$ . Such a permutation is *anchored* if the first entry is 1 and the last entry is  $n$ . We show that the generating function for the enumeration of  $k$ -bounded anchored permutations is always rational, mirroring the known result on (non-anchored)  $k$ -bounded permutations due to Avgustinovich and Kitaev. We then explicitly determine the recursive formulas of minimal depth for the number of anchored  $k$ -bounded permutations of  $n$  for  $k = 2$  and  $k = 3$ , resolving a conjecture listed on the Online Encyclopedia of Integer Sequences (entry A249665). We additionally show that the number of anchored  $k$ -bounded permutations of  $n$  is asymptotically  $O(k^n)$  as a function of  $n$  for a given  $k$ . (Received September 10, 2019)