

1127-05-319

Michael Anastos* (manastos@andrew.cmu.edu), Carnegie Mellon University, Wean Hall 6113,
5000 Forbes Avenue, Pittsburgh, PA 15213. *Coloring directed Hamilton cycles online.*

Consider a directed analogue of the random graph process on n vertices, whereby the $m = n(n - 1)$ directed edges are ordered uniformly at random and revealed one at a time, giving a nested sequence of directed graphs D_0, D_1, \dots, D_m . Let T_q be the smallest index such that every vertex in D_{T_q} has both in-degree and out-degree at least q . It is known that w.h.p. D_{T_q} is the first digraph of the process that has q edge-disjoint Hamilton cycles and hence a $[q]$ edge coloring that yields a Hamilton cycle in each color. We show that this coloring can be constructed online. That is, consider an online coloring process in which each newly appearing edge of D_i is colored irrevocably with one of q colors. We present a randomized coloring algorithm yielding a Hamilton cycle in D_T in all q colors. Joint work with Joseph Briggs. (Received February 06, 2017)