

# FINDING TIGHT HAMILTON CYCLES IN RANDOM HYPERGRAPHS FASTER

OLAF PARCZYK

ABSTRACT. In an  $r$ -uniform hypergraph on  $n$  vertices a tight Hamilton cycle consists of  $n$  edges such that there exists a cyclic ordering of the vertices where the edges correspond to consecutive segments of  $r$  vertices. Our contribution is a first deterministic polynomial time algorithm, which finds a.a.s. tight Hamilton cycles in random  $r$ -uniform hypergraphs with edge probability at least  $C \log^3 n/n$ .

This partially answers a question of Dudek and Frieze [Random Structures & Algorithms 42 (2013),374-385] who proved that tight Hamilton cycles exists already for  $p = \omega(1/n)$  for  $r = 3$  and  $p = (e + o(1))/n$  for  $r \geq 4$  using a second moment argument.

This is joint work with Peter Allen, Christoph Koch and Yury Person.