

Author: Cristiane Sato

Title: Counting sparse connected 3-uniform hypergraphs

Abstract: We will present an asymptotic formula for the number of connected 3 -uniform hypergraphs with n vertices and m edges, when $m = n/2 + \Omega(n^{1/3} \ln^2 n)$. Our strategy is similar to Pittel and Wormald's approach to enumerate connected graphs with given number of vertices and edges in the range with small excess. We define kernels in hypergraphs and compute the probability that a random kernel is connected. Asymptotic formulae for the number of connected k -uniform hypergraphs are already known for the following ranges: $m = n/(k-1) + o(n^{1/3})$ (due to Andriamampianina and Ravelomanana, which extends a result by Łuczak and Karoński) and $m = n/(k-1) + \Theta(n)$ (due to Behrisch, Coja-Oghlan and Kang).

This is joint work with Nick Wormald.