

Institut für Diskrete Mathematik

Combinatorics Seminar

Friday 9th May 12:30

Online meeting (Webex) & AE06, Steyrergasse 30

Colour-biased Hamilton cycles in subgraphs of the random graph

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Dirac's Theorem says that every n -vertex graph with minimum degree at least $n/2$ contains a Hamilton cycle. Lee and Sudakov extended Dirac's theorem to the setting of random graphs, showing that a random graph (above the threshold to contain a Hamilton cycle) typically has the property that every spanning subgraph with minimum degree at least $(1/2 + o(1))np$ contains a Hamilton cycle.

In a different direction, we can ask for a discrepancy version of Dirac's theorem. In this setting, the edges of the graph G are coloured with r colours and we want to know whether there necessarily exists a colour-biased Hamilton cycle where some colour is used (a lot) more than n/r times. Heuristically, this implies there must be many intersecting Hamilton cycles. If G has minimum degree at least $(1/2 + 1/2r + o(1))n$ then such a result holds.

This talk concerns a combination of the above lines of research to give a discrepancy Dirac-type result in the random graph. I will finish with a brief discussion of some potential generalisations and related problems.

This is joint work with Debsoumya Chakraborti and Jared Leon.

Meeting link:

<https://tugraz.webex.com/tugraz/j.php?MTID=me6334298e9cfe1dc540f9578342d5308>

Joshua Erde, Mihyun Kang, Ronen Wdowinski