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\* UCLA Combinatorics Seminar \*

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Date: Thursday, April 24, 1.50-2.50 in Room 6943

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## **Factors and regular subgraphs of random graphs**

### **Abstract**

The  $k$ -core of a graph is the largest subgraph of minimum degree at least  $k$ . Using a mix of probabilistic and algebraic techniques, we show that for  $k$  sufficiently large, the  $(k+2)$ -core of a random graph  $G(n, p)$  asymptotically almost surely has a spanning  $k$ -regular subgraph. Thus the threshold for the appearance of a  $k$ -regular subgraph of a random graph is at most the threshold for the  $(k+2)$ -core. In particular, this pins down the point of appearance of a  $k$ -regular subgraph in  $G(n, p)$  to a window for  $p$  of width roughly  $2/n$  for large  $n$  and moderately large  $k$ . We also discuss some general questions on  $f$ -factors of both deterministic and random graphs  $G$  for arbitrary functions  $f : V(G) \rightarrow \mathbb{N}$ .