

# Uniform generation of random graphs with prescribed degrees in linear time

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**Abstract:** McKay and Wormald used a switching operation combined with a rejection scheme to design a polynomial time algorithm for a uniform generation of random graphs with a given degree sequence. Under assumption  $\Delta^4 = O(M)$ , the expected running time of their algorithm is  $O(M^2\Delta^2)$ , where  $M$  is the sum of all degrees and  $\Delta$  is the maximum degree.

In this talk, I will present an algorithm for the uniform generation of random graphs with given degrees that is based on a new rejection scheme. A new algorithm has expected running time  $O(M)$ , under the same assumption  $\Delta^4 = O(M)$ . I will also describe how a new rejection scheme can be integrated into other generation algorithms to significantly reduce the expected running time.

This talk is based on the joint work with Jane Gao and Nick Wormald.