

THE DEGREE SEQUENCE OF A SCALE-FREE RANDOM GRAPH PROCESS WITH HARD COPYING

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Abstract: We consider a simple random graph process with *hard* copying as following: At any Time-Step t , with probability $0 < \alpha \leq 1$ a new vertex v_t is added and then m edges incident with v_t are added in the manner of *preferential attachment*; or with probability $1 - \alpha$ a existing vertex is copied uniformly at random. We prove in the paper that, when α large enough, the model possesses a mean degree sequence as $d_k \sim Ck^{-(1+2\alpha)}$, where d_k be the limit mean proportion of vertices of degree k . Note that in the present model, while a vertex with large degree is copied, the number of added edges is just its degree, so the number of added edges is not upper bounded.