

Asymptotic structural properties of a random graph with independent vertices' weights

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We study a random graph model constructed according to the following principle. Each vertex v_j is assigned a random weight (fitness) w_j , where the weights w_j are independent identically distributed random variables. Given the vertex weights each pair of vertices v_i, v_j is connected independently by an edge with probability $f(w_i, w_j)$, where f is a pre-selected symmetric function, nondecreasing in each argument. For this model, under certain conditions on the weight distribution and the function f , we obtain limit theorems for the number of isolated vertices and for graph connectivity.