Components in random planar graphs with n vertices and m edges

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Let $P_{n,m}$ denote a graph taken uniformly at random from the set of all labelled planar graphs with n vertices and $m(n)$ edges. We shall use elementary counting arguments to investigate the probability that $P_{n,m}$ has a component isomorphic to H, for various fixed H, as $n \to \infty$. We will provide a complete picture of exactly when the probability is bounded away from 0 and/or 1, showing that there is different behaviour depending on both the graph H and the ratio m/n.