Chasing the giant component in random graphs

The phase transition in random graphs refers to a phenomenon that there is a critical edge density, to which adding a small amount results in a drastic change of the size and structure of the largest component. In the Erdős and Rényi random graph process, which begins with an empty graph on n vertices and edges are added randomly one at a time to a graph, a phase transition takes place when the number of edges reaches $n/2$ and a giant component emerges. In this talk we will discuss key results and techniques to study the size and structure of giant components in various random graphs.