Limits for embedding distributions

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In this paper, we first establish a central limit theorem which is new in probability, then we find and prove that, under some conditions, the embedding distributions of H-linear family of graphs with spiders are asymptotic normal distributions. As corollaries, the asymptotic normality for the embedding distributions of path-like sequence of graphs with spiders and the genus distributions of ladder-like sequence of graphs are given. We also prove that the limit of Euler-genus distributions is the same as that of crosscap-number distributions. The results here can been seen a version of central limit theorem in topological graph theory.