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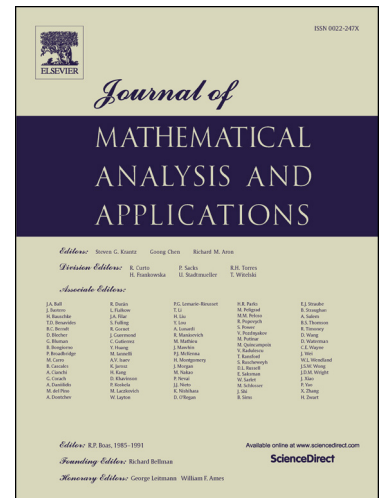
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Asymptotic normality of Laplacian coefficients of graphs

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AbstractLet G be a simple graph with n vertices and let

$$C(G; x) = \sum_{k=0}^n (-1)^{n-k} c(G, k) x^k$$

denote the Laplacian characteristic polynomial of G . Then if the size $|E(G)|$ is large compared to the maximum degree $\Delta(G)$, Laplacian coefficients $c(G, k)$ are approximately normally distributed (by central and local limit theorems). We show that Laplacian coefficients of the paths, the cycles, the stars, the wheels and regular graphs of degree d are approximately normally distributed respectively. We also point out that Laplacian coefficients of the complete graphs and the complete bipartite graphs are approximately Poisson distributed respectively.

Keywords: Laplacian matrix, Laplacian coefficient, asymptotic normality, central and local limit theorem

2010 MSC: 05C50, 60F05, 62E20

1. Introduction

Let $a(n, k)$ be a double-indexed sequence of nonnegative numbers and let

$$p(n, k) = \frac{a(n, k)}{\sum_{j=0}^n a(n, j)}$$

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