Computational argument for signless Laplacian matrix

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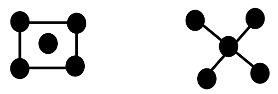
The spectral uncertainty is the ratios of the number of graphs which are not determined by their spectrum or on the number of graphs with n vertices. In fact, this corresponds to the enumeration of cospectral graphs which are different graphs while their adjacency matrices have the same spectrum. But we can generalize this concept to Laplacian matrix and signless Laplacian matrix to compare their efficiency to discriminate graphs. Let a_n, b_n, and q_n respectively the spectral uncertainties of the related adjacency matrix, the Laplacian matrix and the signless Laplacian matrix. Following the computation of Haemers and Spencer we have:

N	H graphs	a_n	b_n	q_n	c.g. A
2	2	0	0	0	0
3	4	0	0	0	0
4	11	0	0	0.182	0
5	34	0.059	0	0.118	2
6	156	0.064	0.026	0.103	10
7	1044	0.105	0.125	0.098	110
8	12346	0.139	0.143	0.097	1722
9	274668	0.186	0.155	0.069	51039
10	12005168	0.213	0.118	0.053	2560606
11	1018997864	0.211	0.090	0.038	215331676

Cospectral graphs with respect to A:



Cospectral graphs with respect to L:

Cospectral graphs with respect to Q:

The behaviors of a_n, b_n, and q_n are quite different. Although a_n, and b_n, are better at the beginning, we can see that for $n \geq 7$, q_n decreases more than a_n, and b_n. The new computations of Brouwer and Spencer on graphs with 12 vertices give: 165091172592 graphs and 31067572481 cospectral graphs respect to A. So we get a_{12}=0.188.