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CONSTRUCTION OF COSPECTRAL INTEGRAL REGULAR GRAPHS

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Abstract

Graphs G and H are called cospectral if they have the same characteristic polynomial. If eigenvalues are integral, then corresponding graphs are called integral graph. In this article we introduce a construction to produce pairs of cospectral integral regular graphs. Generalizing the construction of $G_4(a, b)$ and $G_5(a, b)$ due to Wang and Sun, we define graphs $\mathcal{G}_4(G, H)$ and $\mathcal{G}_5(G, H)$ and show that they are cospectral integral regular when G is an integral q-regular graph of order m and H is an integral q-regular graph of order $(b-2)m$ for some integer $b \geq 3$.

Keywords: eigenvalue, cospectral graphs, adjacency matrix, integral graphs.

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