Families of Integral Cographs within a Triangular Array

Antara Mukherjee* , R. Florz, and H. Ching, The Citadel

The determinant Hosoya triangle, is a triangular array where the entries are the determinants of two-by-two Fibonacci matrices. The determinant Hosoya triangle mod 2 gives rise to three infinite families of graphs, that are formed by complete product (join) of (the union of) two complete graphs with an empty graph. We present the necessary and sufficient condition for a graph from these families to be integral. In addition, we show that some of the graphs are integral cographs, all the graphs have at most five distinct eigenvalues, and some of them are Laplacian integral.

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