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Spectra of Manhattan products of $P_n \# C_4$

Abstract

The Manhattan product is one of the natural product structures defined for bipartite digraphs. $P_n \# C_m$ is the combined Manhattan product of the directed path P_n and the directed cycle C_m . In this talk, we show the way of calculation for the eigenvalues of the adjacency matrix A of $P_n \# C_4$ by giving the recurrence relation of the characteristic polynomial of A , and determine the spectra of $P_n \# C_4$, exactly.