South East Asian J. of Mathematics and Mathematical Sciences
Vol. 19, No. 1 (2023), pp. 225-230

DOI: 10.56827/SEAJMMS.2023.1901.18 **ISSN (Online): 2582-0850**

ISSN (Print): 0972-7752

SOME ENERGIES OF COCKTAIL PARTY GRAPH

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(**Received:** *Feb. 26, 2022* **Accepted:** *Mar. 15, 2023* **Published:** *Apr. 30, 2023)*

Abstract: In this paper, we compute the distance energy, degree sum energy, degree exponent energy and degree sum exponent distance energy of Cocktail party graph.

Keywords and Phrases: Distance energy, degree sum energy; degree exponent energy, degree sum exponent distance energy, cocktail party graph.

2020 Mathematics Subject Classification: 05C15, 05C50.

1. Introduction and Preliminaries

The concept of energy of a graphs was introduced by I. Gutman in the year 1978. Let G be a Simple graph with p vertices and q edges. Let $D = [d_{ij}]$ be the distance matrix of the graph. The eigen values $\rho_1, \rho_2, \ldots, \rho_p$ of D, assumed in non increasing order, are the eigen values of the graph G. The distance energy $E_D(G)$ [4] of G is defined to be the sum of the absolute values of the eigen values of the distance matrix of G. Let K_{2p} be a complete graph with $2p$ vertices $p = 1, 2, 3, \ldots, n$. We delete the edge joining the vertices i and $p + i$,$1 \leq i \leq p$, i.e., we delete p independent edges, i.e., we delete a perfect matching fromK_{2p}. The resulting graph, denoted by CP_{2p} has order $2p$ and has $2p(p-1)$ edges and is regular of degree $2p - 2$. Such a graph is referred to as a "cocktail party graph". The degree sum energy [10] $E_{DS}(G)$ is the sum of the absolute values of the eigen values of the degree sum matrix, $DS(G)$=$\begin{cases} d_i + d_j, & if \ \ i \neq j \\ 0, & i = j \end{cases}$ $\gamma_1, \gamma_2, \ldots, \gamma_p$ are