

## $P_4$ - DECOMPOSITION OF PRODUCT GRAPHS

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### Abstract

A decomposition of a graph  $G$  is a family of edge-disjoint subgraphs  $\{G_1, G_2, \dots, G_k\}$  such that  $E(G) = E(G_1) \cup E(G_2) \cup \dots \cup E(G_k)$ . If each  $G_i$  is isomorphic to  $H$  for some subgraph  $H$  of  $G$ , then the decomposition is called an  $H$ -decomposition of  $G$ . In this paper, we give necessary and sufficient conditions for the decomposition of some product graphs into paths of length three.

**Keywords and phrases:** graph decompositions, path decompositions.

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