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## On minimal forbidden subgraphs for the class of EDM-graphs

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**Abstract:** In this paper, a relation between graph distance matrices and Euclidean distance matrices (EDM) is considered. Graphs, for which the distance matrix is not an EDM (NEDM-graphs), are studied. All simple connected non-isomorphic graphs on  $n \leq 8$  nodes are analysed and a characterization of the smallest NEDM-graphs, i.e., the minimal forbidden subgraphs, is given. It is proven that bipartite graphs and some subdivisions of the smallest NEDM-graphs are NEDM-graphs, too.

Math. Subj. Class.: 15A18, 05C50, 05C12

**Keywords:** Graph, Euclidean distance matrix, distance, eigenvalue.

## **On minimalnih prepovedanih podgrafih razreda EDM-grafov**

**Povzetek:** V tem članku obravnavamo zvezo med razdaljnimi matrikami grafov in matrikami evklidskih razdalj (EDM). Raziskujemo grafe, katerih razdaljna matrika ni EDM (NEDM-grafe). Analiziramo vse neizomorfne grafe na  $n \leq 8$  vozliščih in karakteriziramo najmanjše NEDM-grafe oziroma minimalne prepovedane podgrafe. Dokažemo, da so dvodelni grafi in nekatere subdivizije najmanjših NEDM-grafov prav tako NEDM-grafi.

**Ključne besede:** Grafi, evklidska razdaljna matrika, razdalja, lastna vrednost.