1. On the inverse graph of a non-bipartite unicyclic graph with unique perfect matching

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3. The class of non-bipartite unicyclic graphs with a unique perfect matching, denoted by $\mathcal{U}$, is considered in this talk. A combinatorial description of the inverse of the adjacency matrix of a graph in $\mathcal{U}$ is provided in this talk. We prove that the inverse graph of a graph in $\mathcal{U}$ is always non-bipartite. We characterize the graphs in $\mathcal{U}$ whose inverses are mixed graphs. Among all such graphs in $\mathcal{U}$ we identify those graphs whose inverses are quasi-bipartite. We prove that the inverse graph of a unicyclic graph $U \in \mathcal{U}$ is isomorphic to itself if and only if U is a simple corona. Furthermore, we provide characterizations of unicyclic graphs in $\mathcal{U}$ possessing bicyclic inverses.

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