

## ON THE SPECTRAL RADII OF QUASI-TREE GRAPHS AND QUASI-UNICYCLIC GRAPHS WITH $K$ PENDANT VERTICES\*

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**Abstract.** A connected graph  $G = (V, E)$  is called a quasi-tree graph if there exists a vertex  $u_0 \in V(G)$  such that  $G - u_0$  is a tree. A connected graph  $G = (V, E)$  is called a quasi-unicyclic graph if there exists a vertex  $u_0 \in V(G)$  such that  $G - u_0$  is a unicyclic graph. Set  $\mathcal{T}(n, k) := \{G : G \text{ is a } n\text{-vertex quasi-tree graph with } k \text{ pendant vertices}\}$ , and  $\mathcal{T}(n, d_0, k) := \{G : G \in \mathcal{T}(n, k) \text{ and there is a vertex } u_0 \in V(G) \text{ such that } G - u_0 \text{ is a tree and } d_G(u_0) = d_0\}$ . Similarly, set  $\mathcal{U}(n, k) := \{G : G \text{ is a } n\text{-vertex quasi-unicyclic graph with } k \text{ pendant vertices}\}$ , and  $\mathcal{U}(n, d_0, k) := \{G : G \in \mathcal{U}(n, k) \text{ and there is a vertex } u_0 \in V(G) \text{ such that } G - u_0 \text{ is a unicyclic graph and } d_G(u_0) = d_0\}$ . In this paper, the maximal spectral radii of all graphs in the sets  $\mathcal{T}(n, k)$ ,  $\mathcal{T}(n, d_0, k)$ ,  $\mathcal{U}(n, k)$ , and  $\mathcal{U}(n, d_0, k)$ , are determined. The corresponding extremal graphs are also characterized.

**Key words.** Quasi-tree graph, Quasi-unicyclic graph, Eigenvalues, Pendant vertex, Spectral radius.

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