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Revisiting the Parter-Wiener Theorem

The celebrated Parter-Wiener theorem is an important result concerning the multiplicities of eigenvalues associated with trees. The theorem essentially verifies the existence of a vertex in a tree whose deletion increases the multiplicity of a given eigenvalue under certain conditions. In this presentation, we revisit the proof of this result and establish both the classical theorem and a known extension using the notion of the Schur-complement. We will also explore some related implications using both the Schur-complement and other basic matrix theory. This work represents joint work with an NSERC-USRA, Johnna Parenteau.