AVERAGE MIXING MATRIX OF TREES

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Abstract. The rank of the average mixing matrix of trees with all eigenvalues distinct, is investigated. The rank of the average mixing matrix of a tree on $n$ vertices with $n$ distinct eigenvalues is bounded above by $\lceil n/2 \rceil$. Computations on trees up to 20 vertices suggest that the rank attains this upper bound most of the times. An infinite family of trees whose average mixing matrices have ranks which are bounded away from this upper bound, is given. A lower bound on the rank of the average mixing matrix of a tree, is also given.

Key words. Algebraic graph theory, Eigenspaces, Quantum walks.

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