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Determining and Distinguishing Numbers of Praeger-Xu Graphs

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Abstract

Praeger-Xu graphs are a family of connected, symmetric, 4-regular graphs with unusually large automorphism groups relative to their order. Determining number and distinguishing number are parameters that measure the symmetry of a graph by investigating additional conditions that can be imposed on a graph to eliminate its nontrivial automorphisms. In this paper, we compute the values of these parameters for Praeger-Xu graphs. Most Praeger-Xu graphs are 2-distinguishable; for these graphs we also provide the cost of 2-distinguishing.

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