

An Extension of Seymour's Second Neighborhood Conjecture

Matthew Cowen, Larry Langley*, University of the Pacific

Seymour's Second Neighborhood Conjecture holds that in a directed graph with no symmetric arcs there exists at least one vertex x such that the number of vertices of distance 2 from x is at least as large as the number of vertices of distance 1 from x . We consider whether this property holds when comparing the number of vertices of distance 3 to the number of vertices of distance 1. In other words, does there exist a vertex with third out neighborhood at least as large as its out neighborhood. We restrict directed graphs to those with no symmetric arcs and no oriented 3 cycles.

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