

USF NEXUS INITIATIVE 2019 AWARD RECIPIENT

Lon Mitchell

Study of the Behavior of Colin de Verdière's Matrix-Based Graph Invariant M Under Joins of Graphs

Colin de Verdière's matrix-based graph invariant displays a number of interesting and unexpected behaviors, including a connection to the Four Color Theorem. Three recent conjectures predict it should have more amazing properties concerning graph coloring, graph complements, and the extremal function of the number of edges. By joining smaller graphs to create larger ones, we will subject the predicted properties to more and more difficult tests, yielding either counterexamples or insight into why these fascinating conjectures are true.

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