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Colored Graph Completion

Given a proper vertex-colored graph G , the Π *colored graph completion problem* asks whether there exists a properly colored edge-supergraph of G that has property Π . We classify the complexity of the circular-arc k -colored graph completion problem, for all fixed $k \geq 1$. Surprisingly, the 3-colored case is hard. To our knowledge, this is the first such 3-colored graph completion problem that is known to be hard. We also show that the strongly chordal 3-colored graph completion problem can be solved in $O(n^2)$ time (yielding the completion when it exists). (Joint with K. Cook, R. Sritharan, X. Wang)