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Optimal (degree+1)-Coloring in Congested Clique

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Abstract: We consider the distributed complexity of the (degree+1)-list coloring problem, in which each node u of degree d(u) is assigned a palette of d(u)+1 colors, and the goal is to find a proper coloring using these color palettes. The (Δ+1)-list coloring problem is a natural generalization of the classical (Δ+1)-coloring and (Δ+1)-list coloring problems, both being benchmark problems extensively studied in distributed and parallel computing.

In this paper we settle the complexity of the (degree+1)-list coloring problem in the Congested Clique model by showing that it can be solved deterministically in a constant number of rounds.

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