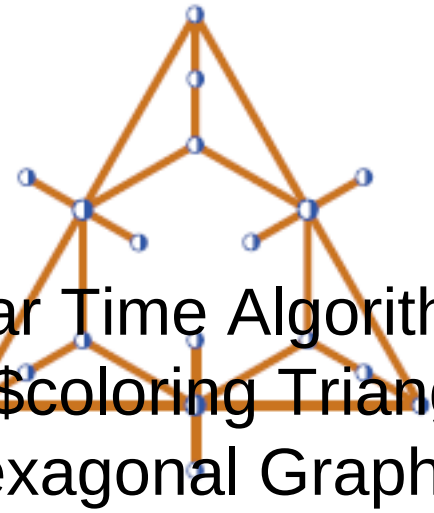
Bled'11 - 7th Slovenian International Conference on Graph Theory



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A Linear Time Algorithm for 7-$[3]$coloring Triangle-free Hexagonal Graphs

Content :

Given a graph G and $p \in \mathbb{N}$, a proper n-$[p]$coloring is a mapping $f:V(G) \rightarrow 2^{\{1,\ldots,n\}}$ such that $\left\vert f(v)\right\vert = p$ for any vertex $v\in V(G)$ and $f(v)\cap f(u)=\emptyset$ for any pair of adjacent vertices u and v. A n-$[p]$coloring is a special case of a multicoloring. Finding a multicoloring of induced subgraphs of the triangular lattice (called \emph{hexagonal graphs}) has important applications in cellular networks. In this talk we present a linear algorithm for 7-[3]coloring of triangle-free hexagonal graphs , which solves the open problem stated by Sau, \v{S}parl and \v{Z}erovnik (2010) and improves the result of Sudeep and Vishwanathan (2005), who proved the existence of a 14-[6]coloring.

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