

Extending precolorings of subgraphs of locally planar graphs

JOAN P. HUTCHINSON

Department of Mathematics and Computer Science
Macalester College
`hutchinson@macalester.edu`

Abstract. Let G be a graph embedded on a surface with all noncontractible cycles sufficiently long, called a locally planar graph. With Michael Albertson we have shown that if a set of vertices of G , at sufficiently large, mutual distance, are precolored with five colors, then this coloring extends to a 5-coloring of G . The precolored extension 5-color theorem holds if bipartite subgraphs, sufficiently far apart, are each colored with two of five colors, not necessarily with the same two colors, provided some additional conditions are met. We discuss these conditions on diameter of the precolored subgraphs and on the "relative width" of the locally planar graph, and pose some related open questions.