

## LOCALLY IDENTIFYING COLOURING OF GRAPHS

L. ESPERET, F. FOUCAUD, S. GRAVIER, I. HONKALA,  
T. LAIHONEN, M. MONTASSIER, P. OCHEM,  
A. PARREAU AND G. PERARNAU

We introduce the notion of locally identifying colouring (lid-colouring for short) : a proper colouring of vertices is said to be identifying if for any pair of adjacent vertices  $u$  and  $v$ , the set of colours in the closed neighbourhood of  $u$  and  $v$  are distinct (when it is possible). The minimum number of colours needed for a graph  $G$  to have a lid-colouring is called the lid-chromatic number. We show that the lid-chromatic number of a graph  $G$  is at most  $O(D^2)$  where  $D$  is the maximum degree of  $G$ . We also study the problem in some class of graphs, in particular in subclasses of chordal graphs and in planar graphs.