

**Hanno Lefmann**

*Edge Colorings of Graphs and Forbidden Monochromatic Subgraphs*

Given a fixed positive integer  $r$  and a fixed graph  $F$  (or hypergraph), we consider for host-graphs  $H$  on  $n$  vertices the number  $c_{r,F}(H)$  of edge-colorings of  $H$  with  $r$  colors such that no monochromatic copy of  $F$  arises. In particular, we are interested in the maximum  $c_{r,F}(n)$  of  $c_{r,F}(H)$  over all graphs  $H$  on  $n$  vertices. For forbidden complete graphs  $F = K_l$  on  $l$  vertices this has been investigated by Yuster and Alon et al. and they showed for  $r = 2$  or  $r = 3$  colors and large values of  $n$  that the maximum number of colorings is achieved by the corresponding Turán graph for  $F$  on  $n$  vertices. However, this changes if the number  $r$  of colors is bigger than 3.