

## **Improper colouring and other graph parameters.**

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A graph  $G$  is a  $(d_1, d_2, \dots, d_t)$ -colourable if  $V(G)$  can be partitioned into  $t$  sets  $V_1, \dots, V_t$  so that for each  $i = 1, 2, \dots, t$ ,  $G[V_i]$  has maximum degree at most  $d_i$ . It is obvious that a graph is improperly colourable if it is sparse enough. In this talk, we will introduce some results about how the sparseness of graphs guarantees an improper colouring of graphs. Also we introduce how other graph parameters, like girth or Hadwiger number, interact with the improper colourability of graphs. Some of results I will introduce are joint work with Alexandr V Kostochka and Xuding Zhu, and some are joint work with Katherine Edwards, Dong Yeap Kang, Sang-il Oum and Paul Seymour.