
FLORIAN LEHNER, University of Warwick

On symmetries of vertex and edge colourings of graphs

Call a vertex or edge colouring of a graph asymmetric, if no non-trivial automorphism preserves it. An asymmetric edge colouring of a graph is an asymmetric vertex colouring of its line graph, so intuitively finding asymmetric edge colourings should be easier. This intuition is supported by the fact that many results on asymmetric vertex colourings have edge colouring counterparts. Kalinowski and Piłśniak further showed that if a graph has an asymmetric vertex k -colouring, then it has an asymmetric edge $(k + 1)$ -colouring. We give a new proof of this result and fully characterise the graphs for which the bound is sharp.