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Star edge colouring of graphs

A star edge (vertex) colouring of a graph is a proper colouring of its edges (vertices) in which there is no bi-coloured path or cycle (path) of length (order) four. It is known that its vertex version has application in optimization problems. Recently its edge version has received a lot of attention. The minimum number of colours that is needed for the star edge colouring of a graph, is called its star chromatic index. It is known that finding the star chromatic index is NP-hard. Although there is a tight bound on the star chromatic index of trees in terms of their maximum degree, finding the star chromatic index even for trees is not trivial. In this talk we state some of the known results and open problems on the star chromatic index of graphs, and we present some polynomial time algorithms for computing the star chromatic index of trees.