

Facially proper colorings of plane graphs with unique extremal colors

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Unique-maximum coloring of a plane graph is a coloring in which for each face the maximum color occurs exactly once on its elements (vertex or edge). Two edges of a plane graph are *facially adjacent*, if they are adjacent and consecutive in a cyclic order around their end vertex. *Facially proper edge (total) coloring* of a plane graph is a coloring in which every two facially adjacent edges (as well as every two adjacent vertices and every edge with its end vertex) have different colors. In this talk we deal with facially proper unique-maximum edge (total) coloring of plane graphs and their list versions, we will also focus on such coloring in which maximum color and second maximum color (minimum color respectively) occurs exactly once on each face and we present upper bounds on the corresponding chromatic numbers.