

Fractional DP-colorings

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DP-coloring is a generalization of list coloring introduced by Dvok and Postle in 2015. This talk will be about a fractional version of DP-coloring. There is a natural way to define fractional list coloring; however, Alon, Tuza, and Voigt proved that the fractional list chromatic number of any graph coincides with its ordinary fractional chromatic number. This result does not extend to fractional DP-coloring: The difference between the fractional DP-chromatic number and the ordinary fractional chromatic number of a graph can be arbitrarily large. A somewhat surprising fact about DP-coloring is that the DP-chromatic number of a triangle-free regular graph is essentially determined by its degree. It turns out that for fractional DP-coloring, this phenomenon extends to a much wider class of graphs (including all bipartite graphs, for example). This is joint work with Alexandr Kostochka (UIUC) and Xuding Zhu (Zhejiang Normal University).