In 1969 we defined in [8] and [9] the chromatic number \( \gamma(p,G) \) relative to distance \( p \) of a graph \( G \) to be the minimum number of colours sufficing for colouring the vertices of \( G \) in such a way that any two vertices of \( G \) of distance not greater than \( p \) have distinct colours. We gave also a characterization of the graphs for which we have \( \gamma(p,G) = p + 1 \). The same result was found by F. Speranza in [13] in 1975. G. Wegner proved in [14] among other results that \( \gamma(2,G) \leq 8 \) for any simple planar graph with maximum degree of the vertices \( \Delta(G) \leq 3 \). A still open problem as shown by M. Gionfriddo in [6] is that to find out if there are planar graphs with maximum degree 3 and \( \gamma(2,G) = 8 \). We found in [12] similar bounds for \( \gamma(3,G) \) for simple bipartite graphs with \( \Delta(G) \leq 3 \) and going out from a paper of S.Antonucci [1] discussing lower bounds for the chromatic number \( \gamma(2,G) \) in function of the number of vertices and number of edges we gave in [12] similar lower bounds for \( \gamma(2,G) \). The connection between different numerical characteristics of graphs had been studied by F. Kramer in [11].

M. Gionfriddo studied in [6] the connection between the s-density of a graph (see definition in [6]) and the chromatic number \( \gamma(s,G) \). Distance colouring was also the subject of the doctor thesis of Mark. R. Dillon [3].

A great number of papers cited in [7] have found a nice utilization of the distance colouring of graphs in the frequency assignment problem (radio channel assignment).

**Extract from References:**

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[10] F. Kramer, Sur le nombre chromatique \( K(p,G) \) des graphes,
Babes-Bolyai University, Cluj, 1984.
[12] F.Kramer and H.Kramer, On the generalized chromatic number,