Mathematics > Combinatorics

Large cliques in graphs with high chromatic number

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We study graphs whose chromatic number is close to the order of the graph (the number of vertices). Both when the chromatic number is a constant multiple of the order and when the difference of the chromatic number and the order is a small fixed number, large cliques are forced. We study the latter situation, and we give quantitative results how large the clique number of these graphs have to be. Some related questions are discussed and conjectures are posed.
Please note that the results of this article were significantly generalized. Therefore this paper will never be published in a journal. See instead arXiv:1103.3917 [math.CO] for the more general results.

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