

# Scaling Laws for Maximum Coloring of Sparse Random Geometric Graphs

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We study maximum coloring of sparse random geometric graphs, in an arbitrary but constant dimension, with a constant number of colors. We show laws of large numbers as well as central limit theorem type results for the maximum number of vertices that can be properly colored. Since this functional is neither scale-invariant nor smooth, we design tools that with the main method of sub-additivity allow us to show the weak and strong laws. Additionally, by proving the Lindeberg conditions, we show the normal limiting distribution.