# Measurable chromatic number and sets with excluded distances

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Given a set of excluded distances $D = d_1, \ldots, d_n$, a measurable set $A$ in the plane is said to be $D$-avoiding if the distances $d_1, \ldots, d_n$ do not occur between points in $A$. I will show that the density of $A$ is exponentially small in $n$ provided the sequence of distances grows sufficiently quickly. In particular, the measurable chromatic number of the plane can be exponential in the number of excluded distances. This resolves a question of Székely, and generalizes a theorem of Furstenberg-Katznelson-Weiss, Falconer-Marstrand, and Bourgain.