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Matt Noble* (matthew.noble@mga.edu). *A Few Questions on the Dimension of Bipartite Graphs.*

The concept of *graph dimension* is introduced in a classic article by Erdős, Harary, and Tutte. For a finite graph G , say that G is of dimension n , and write $\dim(G) = n$, if G can be represented as a unit-distance graph in \mathbb{R}^n but not in \mathbb{R}^{n-1} . It is known that $\dim(G) \leq 2\chi(G)$, where $\chi(G)$ denotes the chromatic number of G . In this talk, we will consider the following question – given a positive integer k , for which n does there exist an arbitrarily large k -chromatic graph G which is critical of dimension n ? Even in the case of $k = 2$, a full resolution of this question appears difficult. (Received September 12, 2021)