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Steve Butler* (butler@iastate.edu). *Rainbow arithmetic progressions.*

Ramsey theory considers the problem of finding monochromatic sub-structures of a given coloring. The opposite extreme is to look for sub-structures that are *rainbow* colored, i.e., which have no repeated colors. We consider the rainbow variation of the van der Waerden problem, i.e., the minimum number of colors needed to guarantee the existence of a rainbow arithmetic progression inside a coloring of $[n]$. In particular this has a significant variance between 3-term progressions and 4-term (or higher) progressions.

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