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Rainbow Ramsey Theory

The rainbow Ramsey theory could be defined as a collection of results which, given a finite coloring of some structure, guarantee the existence of certain rainbow configurations or substructores.

Radoičić conjectured in 2001 that every equinumerous 3-coloring of $\{1, 2 \ldots, 3n\}$ contains a 3-term rainbow arithmetic progression, *i.e.*, an arithmetic progression whose terms are colored with distinct colors. This conjecture initiated a series of results having rainbow structures as the common theme.

In this presentation an overview of the current state in the rainbow Ramsey theory will be given. I will list and describe some of the recent published and unpublished results obtained by Axenovich, Conlon, Fox, Jungić, Mahdian, Martin, Radoičić, and Serra.

A few conjectures and open problems will be mentioned.