

On quantum Ramsey theory, José Mijares (California State University Los Angeles).

Ramsey theory can be understood as an evolving framework to study colorings (or partitions) of mathematical structures admitting interesting monochromatic substructures (that is, substructures contained in one single class of the partition, satisfying a desired property). Many phenomena arising in different contexts can be studied within this framework and that is why Ramsey theory has proved to be useful and very fruitful, with applications in several mathematical fields and other areas of science and technology. In this talk, after reviewing key results from classical Ramsey theory, we will discuss recent “quantum” or noncommutative counterparts to some of those results, including Weaver’s quantum Ramsey theorem for operator systems, an infinite version of it due to Kennedy et al., and a generalization of the latter result that we recently obtained.

References:

M. Kennedy, T. Kolomatski, and D. Spivak, *An infinite quantum Ramsey theorem*. J. Operator Theory 84 (2020), no.1, 49-65.

J. G. Mijares, *A generalized infinite quantum Ramsey theorem for operator systems*, (2026).

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N. Weaver, *A “quantum” Ramsey theorem for operator systems*. Proc. Amer. Math. Soc. 145 (2017), 4595-4605.