

Amenability and paracompactness

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Abstract

This talk is about unification, at the large scale level, of two concepts that seemed utterly different until recently: amenability in analysis and paracompactness in topology. Amenability, only applicable in the case of countable groups, has many very diverse but equivalent definitions. The same is true of large scale analogs of amenability in case of metric spaces of bounded geometry. Our goal is to go beyond the scope of spaces of bounded geometry and we (in joint work with M.Cencelj and A.Vavpetic) propose a new definition of coarsely amenable spaces that is stronger than all previously known analogs of amenability yet is equivalent to them for spaces of bounded geometry.

The new definition gives an easy proof of three categories of spaces being coarsely non-amenable: expander sequences, graph spaces with girth approaching infinity, and unions of powers of a finite non-trivial group.