Safe spaces in geometry and analysis

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Abstract

In the Wild West of geometry and groups, some familiar objects feel like home: Euclidean spaces, hyperbolic geometry, and more generally all the geometries described by semisimple Lie groups or similar matrix groups over local fields.

Harmonic analysis and operator algebras have their own wild seas, but again with a small safe haven: the "Type I", home of the commutative world, compact groups, generalizations of Fourier analysis. In a precise sense, objects that can be "described".

I will present a connection between these two worlds and show how it leads to previously unexpected classification results.