



Oberseminar Institut für Algebraische Geometrie

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Finite approximations as a tool for studying triangulated categories

A metric on a category assigns lengths to morphisms, with the triangle inequality holding. This notion goes back to a 1974 article by Lawvere. We'll start with a quick review of some basic constructions, like forming the Cauchy completion of a category with respect to a metric. And then will begin a string of surprising new results. It turns out that, in a triangulated category with a metric, there is a reasonable notion of Fourier series, and an approximable triangulated category can be thought of as a category where many objects are the limits of their Fourier expansions. And some other ideas, mimicking constructions in real analysis, turn out to also be powerful. And then come two types of theorems: (1) theorems providing examples, meaning showing that some category you might naturally want to look at is approximable, and (2) general structure theorems about approximable triangulated categories. And what makes it all interesting is (3) applications. These turn out to include the proof of a conjecture by Bondal and Van den Bergh, a generalization of a theorem of Rouquier's, a short, sweet proof of Serre's GAGA theorem and a proof of a conjecture by Antieau, Gepner and Heller. And the most recent development, still work in progress, amounts to a major extension of an old result of Rickard's.

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Alle Interessierten sind herzlich eingeladen.