Berlin Mathematics Research Center
MATH+

Berlin Mathematical School
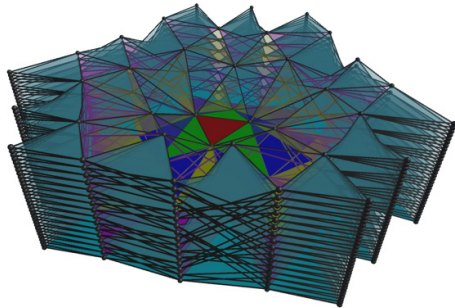**BMS**

MATH+ Friday Colloquium

Friday, 13 December 2024 at 14:15

FU Berlin, Arnimallee 3, Room HS 001   *Tea & Cookies starting at 13:00*

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Roman Sauer
(KIT)

From Kazhdan's property (T) to higher-dimensional expansion

In 1967, Kazhdan defined property (T) in a 3-page paper which turned out to be extremely influential in group theory and rigidity theory. Property (T) is a property of groups defined in terms of their unitary representations. It found surprising applications in various areas of mathematics and computer science, ranging from combinatorics to the theory of arithmetic groups.

Whether a group has property (T) can be characterized in terms of the first group cohomology or its Cayley graph. This suggests generalizations to higher cohomology or to higher-dimensional spaces. Sauer will give a gentle introduction to property T and its more recent higher-dimensional analogs. A particular focus will be put on the geometric applications.

Roman Sauer obtained his PhD in 2003 from the University of Münster under the supervision of Wolfgang Lück. After completing his postdoctoral studies in Münster, Göttingen and Chicago, he became a professor at the University of Regensburg in 2010 and then he moved to the Karlsruhe Institute of Technology (KIT) for a full professorship in 2012. He was selected Chern professor for the Fall 2020 semester at MSRI, Berkeley. Since 2016, he has been the speaker of the DFG-funded research training group "Asymptotic Invariants and Limits of Groups and Spaces" (RTG 2229) run jointly by KIT and the University of Heidelberg.

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