

Friday 3 May 2024 at 14:15

FU Berlin, Computer Science Building, Lecture hall T9

*Tea & Cookies starting at 13:00***Julian Sahasrabudhe***(U Cambridge)*

© wikimedia

A new lower bound for sphere packing

What is the maximum proportion of d -dimensional space that can be covered by non-overlapping, identical spheres? Despite being an old and central problem in mathematics, the answer to this problem is only known in dimensions 1, 2, 3, 8 and 24, where the latter cases 3, 8, 24 were established only very recently and after spectacular advances in mathematics.

In this talk, our interest will be in sphere packings in very large dimension, which is a topic that remains even more mysterious to us today. After discussing the history of this fascinating problem, I will describe a novel but simple approach to constructing the densest known sphere packings in large dimension. Interestingly, this approach will use very little geometry and is based primarily on ideas from probability and combinatorics.

Julian Sahasrabudhe is faculty at the University of Cambridge, where he has been since 2021. He is primarily interested in combinatorics and probability and in connections to other fields such as analysis, geometry and number theory. In 2021, he was awarded the European prize in combinatorics. In 2023, he was awarded the Salem Prize.

