



Sommersemester 2019

# **Dresdner Mathematisches Seminar**

**Dr. Mikhail Lifshits**

St. Petersburg State University, Russland

## **Coding of Poisson Random Sets: Large Deviations**

Consider a random set (or "picture") in the unit cube of  $d$ -dimensional Euclidean space as a union of balls centered at points of a Poissonian random field and having i.i.d. radii. Let  $K$  be the minimal number of balls needed to reproduce the picture.

We study large deviation probabilities for  $K$  and prove in some cases that for large  $n$   $\ln P(K > n) \sim -A n \ln n$  where the constant  $A$  may explicitly depend on dimension, on the distribution of radii, and on the norm under consideration. In many cases the problem of finding the value of  $A$  remains open although some upper and lower bounds are available.

This asymptotics has natural corollaries in high dimensional quantization problems.

This is a joint work with F. Aurzada (TU Darmstadt)

Mittwoch, 19.06.2019, 17:00 Uhr - Willers-Bau B 321

Leitung: Prof. Dr. René Schilling