

# Efficiently covering the Sierpinski carpet with tubes

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## Abstract

We call a  $\delta/2$ -neighbourhood of a line in  $\mathbb{R}^d$  a tube of width delta. For a subset  $K$  of  $\mathbb{R}^d$  it is an interesting problem to try and efficiently cover  $K$  with tubes as to try and minimise the total width of the tubes used. If for every  $\varepsilon > 0$  we are able to find a collection of tubes which cover  $K$  with their total width less than epsilon we say that  $K$  is tube-null. The notion of tube-nullity has its roots in harmonic analysis, however, the notion is interesting in its own right. In the talk I will give an example of a set which is tube-null, the Sierpinski carpet, along with a rough sketch of its proof. If time permits I will discuss some open problems in the area along with their progress.

**Time:** 12 p.m, 20<sup>th</sup> October 2021

**Location:** B3.02

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