

## Dividing a set in half

*Monday, July 4, 2022 11:30 AM (1 hour)*

In this talk I will consider the following problem of isoperimetric type:

Given a set  $E$  in  $\mathbb{R}^d$  with finite volume, is it possible to find an hyperplane  $P$  that splits  $E$  in two parts with equal volume, and such that the area of the cut (that is, the intersection of  $P$  and  $E$ ) is of the expected order, namely  $(\text{vol}(E))^{1-1/d}$ ?

We can show that the answer is positive if the dimension  $d$  is 3 or higher, but, somewhat surprisingly, our proof breaks down completely in dimension  $d = 2$ , and we do not know what happens in this case.

(However we know that the answer is positive even for  $d = 2$  if we allow cuts that are not exactly planar, but close to planar.)

This is a work in progress with Alan Chang (Princeton University).

**Primary authors:** CHANG, Alan; ALBERTI, Giovanni (Università di Pisa)

**Presenter:** ALBERTI, Giovanni (Università di Pisa)