

1121-05-216

Anders Björner* (bjorner@kth.se), Kungl. Tekniska Högskolan, SE-10044 Stockholm, Sweden.
Continuous matroids revisited.

Abstract: The concept of a “matroid”, launched in the 1930s, provides an axiomatisation of the notion of independence. In recent years matroids, and some relatives (oriented matroids, arithmetic matroids, Bergman fans, . . .), have come to play a central role in various contexts where combinatorics interacts with algebra and geometry.

In this talk I will discuss extending the matroid concept in a different direction, namely having a continuous rank function. This idea is inspired by the example of von Neumann’s ”continuous geometries” from 1936.

I will first review work done in collaboration with L. Lovász in the 1980s which produced several examples, including continuous analogs of set partitions and field extensions. I will then discuss what would be a good axiomatisation of “continuous matroids”. This should include the mentioned examples as well as the von Neumann geometries, these latter suggesting ties to operator algebras. (Received July 18, 2016)