

Regular matroids: Torelli theorem and moduli space

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Abstract:

Matroids are a combinatorial abstraction of linear spaces and of hyperplane arrangements and, at the same time, a generalisation of graphs. In Algebraic Geometry they are an important tool in the study of moduli spaces, appearing frequently in the construction of counter-examples but also in the study of geometrical and cohomological classes. In this talk I will start by making an introduction to the theory of matroids by looking at key examples. Then I will talk about work in collaboration with Filippo Viviani on regular matroids. Our aim is to get classifying spaces (moduli spaces) for these objects and also to get combinatorial characterisations for them (Torelli type theorems). The inspiration and motivation for our work comes from the study of classical moduli spaces of curves and abelian varieties and as well of their compactifications and tropicalizations.