

Combinatorial representations

Max Gadouleau

Combinatorial representations are generalisations of linear representations of matroids based on functions over an alphabet. In this talk, we define representations of a family of bases (r -sets of an n -set). We first show that any family is representable over some finite alphabet. We then link this topic with design theory, and especially Wilson's theory of PBD-closed sets. This allows us to show that all graphs ($r = 2$) can be represented over all large enough alphabets. If time permits, we finally give a characterisation of families representable over a given alphabet as subgraphs of a determined hypergraph.