Algebraic methods in combinatorics

Natasha Morrison (IMPA and Cambridge)

Linear algebraic methods are some of the most beautiful and powerful techniques in combinatorics. In this course I will present some the most appealing applications of these techniques. I hope to cover the following topics:

- Intersection theorems including Frankl–Wilson and applications.
- Sets of points in the plane with constraints on their pairwise distances.
- The Graham–Pollak theorem.
- The Combinatorial Nullstellensatz and applications.
- Bollobás two-families theorem and generalisations.

If there is time, I will also discuss some more recent applications.

References
