

Title: Classifying translation planes by studying their groups of symmetries

Abstract: The study of affine (or projective) planes is very combinatorial in its beginnings. However, the more one digs into the structure of these planes the more evident it is that algebraic tools need to be used. In particular, the study of certain symmetry groups of a plane that fix a line pointwise seems to be weapon of choice.

Translation planes are a class of planes with a natural vector space structure, which makes them ideal to be studied by looking at their symmetry groups, which are always groups of semi-linear maps.

In this talk we will go over the basic tools that allow this ‘a la Klein’ study of translation planes. We will also see an example of this study: we will look at the solution of an old problem, called “Il Problema Abeliano Rosso” (joint work with E. Diaz, U. of Connecticut).

Just some linear algebra and group theory is enough to follow this talk. Hence, this is a student-friendly talk.