

WEEK 7 SCHEDULE

TABLE 1. July 17-July 21

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00-9:00					
9:00-10:00		Research	Research	Research	Research
10:00-11:00	Presentations (PB 390)	Research	Research	Research	Research
11:00-12:00	Presentations (PB 390)	Research	Research	Colloquium (PB 134)	Research
12:00-1:00	Lunch	Lunch	Lunch	Lunch	Lunch
1:00-2:00	Research	Research	Research	Research	Research
2:00-3:00	Research	Research	Research	Research	Research
3:00-4:00	Research	Research	Research	Research	Research
4:30-5:30		Colloquium (PB 136)	Footie		

Colloquium speaker: Rolando Pomareda (Universidad de Chile)

Title: Finite Projective Geometries

Abstract: In this talk, we will show how by reversing a development going from Euclid to Descartes in which geometry was replaced by algebra as a fundamental discipline of mathematics, Hilbert showed that a subset of his axioms for plane geometry (essentially the incidence axioms) together with the theorem of Desargues permits the introduction of coordinates on a straight line that are elements of a skewfield.

Also, we will consider the concept of high-dimensional geometry as an example of a concept that is best understood from an abstract point of view: we will present the concept of dimension of a projective geometry on incidence structures and consider then the theorem of Desargues of the associated Euclidean geometry. In this situation, Hilbert showed that every Desarguesian projective plane is isomorphic to a suitable structure from a vector space.

Finite geometries can also be defined purely axiomatically. However, dimension two has affine and projective finite planes that are not isomorphic to the ‘standard plane’, namely the non-Desarguesian planes. We will present suitable constructions of non-Desarguesian finite planes and consider interesting subsets of points, such as unitals, and their groups of automorphisms.

Colloquium speaker: Khang Tran (Fresno State)

Title: Zeros of polynomials and their generating functions

Abstract: We discuss an approach which shows that the zeros of various sequences of polynomials lie on fixed curves on the complex plane. Particularly, we study connections between the zeros of a sequence of polynomials and its generating function. As an example, we characterize sequences of hyperbolic polynomials satisfying four-term recurrences with constant coefficients. In another example, we analyze connections between the hyperbolicity of polynomials forming the denominator of the generating function and the hyperbolicity of the generated sequence. We also discuss connections between the q -analogue of discriminant and the equation of the curve containing the zeros of a given sequence of polynomials.

Weekend Activity: A day at Shaver lake. We leave the dorms at 8:30 a.m., and spend the day at Shaver lake, doing water stuff. Return upon boredom.