UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

COLLOQUIUM

Dr. Henry Schenck

(University of Illinois, Urbana-Champaign)

"Fundamental groups of line arrangements, cohomology jump loci and algebraic surfaces"

Abstract: In 1983, Hirzebruch wrote ``The topology of the complement X of an arrangement of lines in the projective plane is very interesting, the investigation of the fundamental group very difficult''. Presentations for the fundamental group have been given by Randell, Salvetti, Arvola, and Cohen-Suciu. However, these presentations are quite intricate. Somewhat coarser invariants are the lower central serie ranks of the fundamental group. Conjectures of Suciu relate the lower central series ranks of the fundamental group to the cohomology jump loci of H^*(X). This ring is known as the Orlik-Solomon algebra, and has a simple, combinatorial description in terms of the intersection lattice of X, where X is the complement of a hyperplane arrangement. I will describe all these objects, and connect them to factorizations of a certain nef but not ample line bundle on a blowup of the projective plane at the intersection points of the line arrangement.

Wednesday, March 7th, 2012

Surge 284

4:10-5:00pm

Tea Time at 3:40pm