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**Department of Mathematics and Statistics**

**COLLOQUIUM**

**Tuesday, October 11th, 2015**

4:00 – 5:00 pm, Adel Mathematics Bldg., Room 164

(refreshments at 3:45)

Dr. Michael Falk

NAU

Milnor fibers of arrangements and the residue double complex

Abstract: Let Q be a homogeneous polynomial in n variables. The set V of complex solutions to the equation Q(x)=0 is an algebraic variety with a singularity at the origin. The set F of complex solutions to the equation Q(x)=1 is a smooth (2n-2)-dimensional manifold, called the Milnor fiber of Q. It is the typical fiber of the map defined by Q from the complement of V to C\{0}, which is a fiber bundle whose topology is an analytic invariant of the singularity of V at the origin.  
  
If Q is a product of non-proportional linear polynomials, then V is a union of hyperplanes. In this case it was conjectured that the abelianization of the fundamental group of F is torsion-free, with rank determined by the combinatorial incidence data associated with the components of V. We’ll sketch a new proof of the latter statement, based on a tool developed for a different purpose in previous joint work with V. Schechtman and A. Varchenko, called the residue double complex.

Algebra Combinatorics Geometry and Topology (ACGT) Seminar meets Tuesdays, 12:45 – 1:45 pm, AMB 164.

Steve Wilson continues speaking about Cayley and PX graphs.

Applied Math Seminar (AMS) meets Thursdays, 12:45 – 1:45 pm, AMB 164.

Terry Blows continues speaking about population modeling.

Friday Afternoon Undergraduate Mathematics Seminar (FAMUS) meets Fridays, 3pm.