NORTHERN ARIZONA UNIVERSITY

Department of Mathematics and Statistics

COLLOQUIUM

Tuesday, November 24th, 2015

4:00 – 5:00 pm, Adel Mathematics Bldg., Room 164
(refreshments at 3:45)

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and
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An Overview of Multiplicities and Reductions

ABSTRACT. Let R be a local noetherian ring with maximal ideal $\mathfrak{m}$. For ideals $I \subseteq J$, I is said to be a reduction of J if $IJ^n = J^{n+1}$ for $n \gg 0$. For certain ideals, we can construct a Hilbert polynomial and define the Hilbert-Samuel multiplicity as the normalized leading coefficient of the Hilbert polynomial. Further, we can show that if I is a reduction of J, then the Hilbert-Samuel multiplicities of the ideals are the same. The converse was proven by David Rees in 1961. A generalization of the Hilbert-Samuel multiplicity, called the j-multiplicity was developed by Achilles and Manaresi in 1993. The relationship between reductions and j-multiplicities was established by Flenner and Manaresi in 2001. Another generalization developed by Achilles and Manaresi in 1997 was the generalized multiplicity sequence. In 2001, Ciupercă proved that if $I \subseteq J$ is a reduction, then the multiplicity sequences for each ideal are the same. We will sketch the proof of the converse, recently proved in 2015.

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

Applied Math Seminar (AMS) will meet Thursday December 3rd and 10th, 12:45 – 1:45 pm, AMB 164.
Wilson Lough will be speaking on his research.

Friday Afternoon Undergraduate Mathematics Seminar (FAMUS) meets Fridays, 3pm, AMB 164.