BI-CO MATHEMATICS COLLOQUIUM

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"Matrix groups, Newton polygons, and the quantum Bruhat graph"

Monday, September 17, 2012

Talk at 4:00 – Park 328
Tea at 3:30 – Park 355, Math Lounge

Abstract:
     When working with matrix groups in which the entries are power series, one can use the characteristic polynomial to associate a Newton polygon to each matrix. Looking across the entire group of matrices, which Newton polygons actually arise from this construction? If we further restrict to matrix elements in double cosets indexed by an infinite permutation, which Newton polygons do we see? This set of Newton polygons turns out to have many rich and perplexing properties, in addition to deep applications to algebraic geometry. In particular, we will present a formula for computing the maximum Newton polygon in terms of paths in a weighted directed graph on the symmetric group, called the quantum Bruhat graph.

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