## Department of Mathematics and Statistics

## Colloquium Announcement

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Affine Bezout-Theorem: an Exact BKK-Type Formula via Mixed Volumes and Generalized Newton Diagrams


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## Abstract:

The "affine Bezout problem" is that of counting the number of solutions (in $\mathrm{C} \wedge n$ ) of $n$ polynomials in $n$ variables, provided all zeros of the system are isolated. The Bernstein-Kushnirenko-Khovanskii formula gives an estimate of this number in terms of the mixed volume of the Newton polytopes of the polynomials. However, the estimate is not exact if there are "intersections at infinity". We introduce the notion of Newton diagrams of divisors with respect to arbitrary "flags of subvarieities" and show that it is possible to arrive at "empty intersection at infinity" via a finite number of blow-ups which "subdivide" the faces of Newton diagrams of these polynomials. The exact solution to the affine Bezout problem is then given by a recursive formula which involves at each step mixed volume of the faces of these Newton diagrams.

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