ASKOLD KHOVANSKII, University of Toronto

Newton polyhedra and irreducible components of complete intersection

Consider a variety X defined in $(\mathbb{C}^*)^n$ by a generic system of equations with given Newton polyhedra. It is known that many "natural" discrete invariants of X can be explicitly computed in terms of Newton polyhedra. I will talk about the number $b_0(X)$ of irreducible components of X. There are two classical results about $b_0(X)$. First, if $\dim X = 0$ then by Bernstein-Kouchnirenko theorem $b_0(X)$ is equal to the mixed volume of Newton polyhedra multiplied by $n!$. Second, if $\dim X > 0$ and all Newton polyhedra have the biggest possible dimension n then $b_0(X) = 1$. I will explain how to compute $b_0(X)$ in general case. One extra result. It turns out that each component of X can be defined by a generic system of equations whose Newton polyhedra can be constructed explicitly. So a natural discrete invariant of each component can be computed explicitly (such invariant takes the same value at all components of X).