



COLLOQUIUM

Thursday, September 20, 2018

4:00 p.m. - 5:00 p.m.

315 Armstrong Hall

Milnor numbers of hypersurface singularities, mixed multiplicities of ideals and volumes of polytopes

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If H is an analytic surface defined by $f = 0$ in \mathbb{C}^{n+1} with an isolated singularity at the origin, then the colength of the Jacobian ideal $J(f)$ is called its Milnor number. B. Teissier refined this notion by a sequence of $\mu^*(H)$ Milnor numbers of intersections of H with general linear spaces of dimension i for $i = 0, 1, \dots, (n + 1)$. J. J. Risler and Teissier showed that this sequence coincides with the mixed multiplicities of the maximal ideal and $J(f)$. They proposed conjectures about log-convexity of the $\mu^*(H)$ which were solved by B. Teissier, D. Rees-R. Y. Sharp and D. Katz. These give rise to Minkowski inequality and equality for the Hilbert-Samuel multiplicities of ideals. Mixed multiplicities are also connected with volumes of polytopes and hence to counting solutions to polynomial equations.