1003-14-6 **Robert Lazarsfeld***, University of Michigan, Department of Mathematics, 2072 East Hall, 525 E Univ Avenue, Ann Arbor MI 48109-1109. *How polynomials vanish: singularities, integrals, and ideals, Part II: The local theory of multiplier ideals.*

Fix a polynomial $f \in \mathbf{C}[z_1, \ldots, z_n]$ and a weighting coefficient $\lambda > 0$. One can attach to these data a *multiplier ideal*

$$\mathcal{J}(f^\lambda) =_{\text{locally}} \left\{ \text{holomorphic functions } h \ \Big| \ \frac{|h|^2}{|f|^{2\lambda}} \text{ is locally integrable} \right\}.$$

These ideals measure in a somewhat subtle manner the singularities of the hypersurface defined by f, and they also exhibit remarkable formal properties. We will discuss invariants to which these multiplier ideals give rise, and present some applications to questions of an algebraic nature. (Received March 22, 2004)