Arnold's problem on monotonicity of the Newton number for surface singularities

March 20, 2018

Abstract

According to the Kouchnirenko Theorem, for a generic (it means non-degenerate in the Kouchnirenko sense) isolated singularity f its Milnor number $\mu(f)$ is equal to the Newton number $\nu(\Gamma_+(f))$ of a combinatorial object associated to f, the Newton polyhedron $\Gamma_+(f)$. We give a simple condition characterising, in terms of $\Gamma_+(f)$ and $\Gamma_+(g)$, the equality $\nu(\Gamma_+(f)) = \nu(\Gamma_+(g))$, for any surface singularities f and g satisfying $\Gamma_+(f) \subset \Gamma_+(g)$. This is a complete solution to an Arnold's problem (1982-16) in this case.