

A new proof of Zariski's theorem about complete ideals in two-dimensional
regular local rings

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Abstract: Zariski's first paper in algebra written in 1938 proved among many other results that the product of complete ideals is complete in the polynomial ring $k[X, Y]$ where k is an algebraically closed field of characteristic zero. This was generalized to two-dimensional regular local rings in Appendix 5 of Zariski-Samuel's classic "Commutative Algebra". We will present a new proof of this theorem using the formula of Hoskin-Deligne about co-length of a zero-dimensional complete ideal in a two-dimensional regular local ring in terms of the quadratic transforms of R birationally dominating R .

Pre-requisites :

Familiarity with contents of the previous talks.