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Verzweigung bei Galoiserweiterungen und Quotienten regulärer analytischer Raumkeime. (German)

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By using ramification theory as expounded by M. Auslander and D. A. Buchsbaum [Amer. J. Math. **81** (1959), 749–765; MR0106929] the authors are able to give proofs of the following results, which in the case $k=C$ are due to D. Prill [Duke Math. J. **34** (1967), 375–386; MR0210944]: Let k be an algebraically closed field complete for a nontrivial valuation. For an analytic space X over k, let (X,x) denote the germs of functions analytic at $x\in X$. (A) Let (X,x) and (Y,y) be a regular and a normal singularity, respectively. Suppose $\pi\colon (X,x)\to(Y,y)$ is a separable analytic cover whose singular variety has codimension at least two. Then (Y,y) is the quotient of (X,x) modulo a finite group of analytic automorphisms and π is the natural quotient map. (B) If (X,x) is regular, G a finite group of automorphisms, N the normal subgroup of G generated by the reflections and (Y,y) is the quotient space, then G/N is uniquely determined up to conjugation by (Y,y).

Both of these results are deduced from the main theorem of the paper which is stated here (Satz 4): Let A be a noetherian, normal, integral domain. Let B be an integral domain which is integral over A and whose field of quotients M is a finite separable extension of the field of quotients K of A. Let C be the integral closure of A in the Galois closure of M over K. If $A_{\mathfrak{p}}$ is regular for each prime ideal $\mathfrak{p}$ with height $\mathfrak{p}=r$ and if height $\mathfrak{N}(B/A)>r$, then height $\mathfrak{N}(C/A)>r$. ($\mathfrak{N}(C/A)$ is the Noetherian different of the A-algebra C. It is also called the homological different and the ramification ideal.)

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