ERRATA FOR "GOOD FORMAL STRUCTURES FOR FLAT MEROMORPHIC CONNECTIONS, II"

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Matthew Morrow has observed that the proof of Lemma 3.1.6 is insufficient: while any regular sequence of parameters of R does contain a sequence of parameters of $R_{\mathfrak{q}}$, it need not contain a *regular* sequence of parameters. To give a completed argument, we first observe that the proofs of Lemma 3.1.7, Corollary 3.1.8, and Corollary 3.1.9 do not depend on Lemma 3.1.6, so we may use them freely in what follows.

Let $\partial_1, \dots, \partial_n$ be a sequence of derivations of rational type with respect to the regular sequence of parameters $x_1, \dots, x_n$ of R. Let $y_1, \dots, y_m$ be a sequence in R which is a regular sequence of parameters of $R_{\mathfrak{q}}$. Since $\widehat{R}$ satisfies the weak Jacobian criterion by [32, Theorem 100], we may reorder the original sequence $x_1, \dots, x_n$ so as to ensure that the $m \times m$ matrix A given by $A_{ij} = \partial_i(y_j)$ has nonzero determinant modulo $\mathfrak{q}$. We may then define the derivations $\partial'_j = \sum_i (A^{-1})_{ij} \partial_i$ on $R_{\mathfrak{q}}$ for $j = 1, \dots, m$.

To complete the proof, we must establish that the derivations $\partial'_1, \dots, \partial'_m$ commute. To see this, we may assume without loss of generality that R is complete; by Corollary 3.1.8, we then have $R \cong k[\![x_1, \dots, x_n]\!]$, so $k[\![x_1, \dots, x_m]\!]$ is contained in the joint kernel of $\partial'_1, \dots, \partial'_m$. By counting dimensions, we see that $R/\mathfrak{q}$ is finite over $k[\![x_1, \dots, x_m]\!]$; we may thus identify the completion of $R_{\mathfrak{q}}$ with $\ell[\![y_1, \dots, y_m]\!]$ where ℓ is the integral closure of the fraction field of $k[\![x_1, \dots, x_m]\!]$ in $R_{\mathfrak{q}}$. On this ring, the actions of $\partial'_1, \dots, \partial'_m$ are all ℓ-linear, so they must coincide with the formal partial derivatives in the variables $y_1, \dots, y_m$; this proves the claim.

One additional typo: in Lemma 3.2.5(a), the reference to [33, Theorem 101] should be to [32, Theorem 101].

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