NOTE ON DUCROS' BOOK — CHAPTER 4

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Contents

1. Introduction

These are a series of notes on the book [Duc24].

2. Notes

Let k be a non-Archimedean analytic field. Consider a k-analytic curve X.
Unlike Ducros' book, we assume that X is good.[1]

4.1.1. Line 17, $\mathbb{P}^{1,\mathrm{an}}_k$ should be $\mathbb{P}^1_k$.

4.2.1. Line 4, $\varphi^{-1}(\varphi((x))$ should be $\varphi^{-1}(\varphi(x))$.

4.2.3. Line 5, φ should be f.

4.2.4.1. Line 6, $= 0$ should be removed.
Line 8, X' should be X_0.

4.2.5.1. The existence of function mentioned in the first paragraph is constructed in 3.5.9.

4.2.9. Line 3, $\mathbb{P}_{\mathscr{H}(x)}$ should be $\mathbb{P}_{\mathscr{H}(x)/k}$.

4.2.16. Note that the reduction in the first paragraph of the proof is possible, even for 2) iii): If X is generically reduced, we can always take U small enough so that $U \setminus \{x\}$ is reduced.

4.2.16.1. Line 5, the second y should be x.
Line 5, U est une composante connexe de $\varphi^{-1}(x)$ should be V est une composante connexe de $\varphi^{-1}(U)$.

4.2.16.2. Line 26, $\varphi^{-1}U$ should be $\varphi^{-1}(U)$.

4.3.4.1. Line 4, x_i should be x'_i.

4.3.5.2. Line 1, 3) should be 1).

4.3.6.4. Line 8, $|\mathcal{O}_X(Z)^\times|$ should be $|\mathcal{O}_X(Z)^\times|_b$.

4.3.9.1. Line 18, Y^{an} should be $S^{\mathrm{an}}(Y)$.
Line 19, X^{an} should be $S^{\mathrm{an}}(X)$.

4.3.11.1. Line 7, b should be y.
Line 8, a should be x.
Line 8, le lemma should be la proposition.

[1] This is proved in Ducros' book based on Temkin's goodness criterion. I cannot understand the proof of the latter as explained in my note on graded reductions.

4.4.3.1. Line 8, U should be $X \setminus \{x\}$.
Line 9, U should be Z.

4.4.5. Line 4, $\mathrm{H}^1(\kappa(x), \mu_\ell))$ should be $\mathrm{H}^1(\kappa(x), \mu_\ell)$.

4.4.5.3. Line 2, $\mathrm{H}^1(X, x)_{\text{ét}}, \mu_\ell)$ should be $\mathrm{H}^1((X, x)_{\text{ét}}, \mu_\ell)$.

4.4.8.3. Line 10, H^1 should be H^1.
In the displayed formula, $T^\ell - f(x)$ should be $(T^\ell - f(x))$.

4.4.10.4. Line 5, remove the first sentence.

4.4.14. Line 3, Y should be X.
Line 9, the formula should be $\mathrm{H}^1((X, x)_{\text{ét}}, \mu_\ell) \sim \mathrm{H}^1(\mathscr{H}(x), \mu_\ell)$.

4.4.23. Line 6, t should be T.

4.5.4. Line 6, coronaire should be une couronne virtuelle.

4.5.12. Line 1, $p\colon X \to X_{\widehat{k^a}}$ should be $p\colon X_{\widehat{k^a}} \to X$.
The finiteness of the fiber over $x \in X_{[0,2,3]}$ is due to the fact that x is Abhyankar. See 3.2.15.4.

References

DucCurve [Duc24] A. Ducros. La structure des courbes analytiques. 2024. arXiv: 2405.10619 [math.AG].

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