WILD CONDUCTOR EXPONENTS OF CURVES: ERRATA

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- Theorem 1.4/6.5 and Lemma 6.4 need the additional assumption that the leading coefficient of f as a polynomial in x lies in $K^\times$.[1]
- The specialisation argument in the sentence "We can ensure this is the case..." in the proof of Theorem 1.4/6.5 should be replaced by the observation that, over $\overline{K}(y)(\varepsilon_0, \ldots, \varepsilon_{n-1})$, f_ε has fixed leading coefficient and independent lower coefficients. At the end of the same proof, ℓ-adic should read p-adic.
- Lemma 5.7 should be replaced by the following:

Lemma 0.1. *Let $X \to B$ be an S_n-cover over a finite extension of $\mathbb{Q}_p$, with $p > n$, such that $\pi \colon X/S_{n-1}^\circ \to B$ is simply branched, except possibly above one geometric branch point. Let $C_m \leq S_n$ contain no transposition. If π is simply branched, then the cover $X \to X/C_m$ is unramified.*

If π is not simply branched, then wild inertia acts trivially on the geometric points of X above the exceptional fibre. In particular, for every prime $q \mid m$, wild inertia acts trivially on the ramification points of $X \to X/C_m$ whose ramification index is divisible by q.

Proof. Fix a geometric point $P \in B$, and choose a point $\mathfrak{P}$ on X lying above P. The points above P on X/S_{n-1}° correspond to the orbits of $\{1, \ldots, n\}$ under the action of the inertia group at $\mathfrak{P}$. The assumption that $X/S_{n-1}^\circ \to B$ is simply branched away from a particular geometric branch point thereby implies that, as we vary over P, each inertia group is either trivial or generated by a transposition, except for those above this geometric branch point.

The inertia group of $X \to X/C_m$ at $\mathfrak{P}$ is the intersection of C_m with the inertia group of $X \to B$ at $\mathfrak{P}$. Because C_m contains no transposition, this cover is unramified away from any exceptional fibre.

In the non-simply branched case, write b for the exceptional geometric branch point and let $I \leq S_n$ be the inertia group at a chosen point $\mathfrak{P}$ of X above b. By uniqueness, b is fixed by G_K. We identify geometric points of X above b with S_n/I. The action of G_K commutes with the S_n-action, so the induced action of G_K on S_n/I factors through the group N_I/I, where N_I is the normaliser of I in S_n, of order prime to p. Therefore, W_K acts trivially on S_n/I, so on the points above b. The final claim follows because the ramification points of $X \to X/C_m$ above b form a subset of this fibre. □

[1]A stronger proof allows the leading coefficient $a_n(y)$ to simply need $w_K(a_n(y)) = 0$.