Erratum: Rigid analytic p-adic Simpson correspondence for line bundles

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In this note, we correct some mistakes in the paper

> Z. Song: Rigid analytic p-adic Simpson correspondence for line bundles, Communications in mathematics and statistics 10 (2022), 739-756.

1. Rigid analytic p-divisible group

Weizhe Zheng pointed out to me that the assumption of Theorem 3.6 on page 751 is slightly incorrect. The assumption should be replaced with "only consider the topological p-torsion part of $(Pic^0_{X/\overline{\mathbb{Q}_p}})^{an}$" and denote it by $(Pic^0_{X/\overline{\mathbb{Q}_p}})^{an,tt}$. After this change, the rest of the proof of Theorem 3.6 as well as later arguments go through.

The reason is that $(Pic^0_{X/\overline{\mathbb{Q}_p}})^{an}$ may have non topological p-torsion points. The counterexample is given by Example 5(5) on page 17 of [1] as follows: suppose that the valuation of K is discrete, A is an abelian variety over K and it has Néron model $\mathcal{A}$ over $\mathcal{O}_K$. Let $\widehat{A}$ be the p-adic completion of A, then the subgroup $\widehat{\mathcal{A}}^{an}$ of A^{an} is a compact analytical subgroup that contains $U = \cup_{n\geq 1} sp^{-1}(\mathcal{A}_s[p^n])$, which is the topological p-torsion part of A^{an}.

Denote the reduced special fiber of $\mathcal{A}$ by $\mathcal{A}_s$. Here sp is the specialization map $sp : |\mathcal{A}^{an}| \longrightarrow |\mathcal{A}_s|$.

References

[1] L. Fargues, Groupes analytiques rigides p-divisibles, *Math. Ann.* **374** (2019), 723-791.