Correction to
A note on Manin's theorem of the kernel

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(1) The assertion on lines 8–9 of page 389 that H is irreducible as a representation of G on a $\mathbb{Q}$-vector space is *false*. A counter-example can be found in the last section of [2], which is a family of 8-dimensional abelian varieties over a Shimura curve.

This error was found by Daniel Bertrand, who also found a "fix", to the effect that the key statement "*N is either* 0 *or is equal to* H^*" on lines 9–10 of page 389 following the incorrect statement still holds. The rest of the argument on lines 10–13 go through.

By Hodge II, the local systems $\underline{H}^{\sim}$ has a natural structure as a variation of mixed Hodge structure. Let $\mathcal{G}^{\sim}$ (resp. $\mathcal{G}$) be the generic Mumford-Tate group of $\underline{H}^{\sim}$ (resp. $\underline{H}$) as defined in [1]. The theorem on the fixed part in [3, 4.19] applied to tensor constructions of the variation of mixed Hoddge structure $\underline{H}^{\sim}$ implies that the connected component of $G^{\sim}$ is a normal subgroup of $\mathcal{G}^{\sim}$ and is contained in the derived group of $\mathcal{G}^{\sim}$; see the proof of Thm. 1 of [1, §5]. (In other words, in [1, §5 Thm. 1] the proof shows that H_x is a normal subgroup of Mumford-Tate group G_x and is contained in the derived group of G_x.) This normality statement implies that $N := \mathrm{Ker}(G^{\sim} \twoheadrightarrow G)$, regarded as a subgroup of $H^{\star}$, is stable under the natural contragradient action of $\mathcal{G}^{\sim}$. The hypothesis that the abelian scheme $A \to U$ is simple implies that H is irreducible as a $\mathbb{Q}$-representation of $\mathcal{G}$. Hence N is either 0 or is equal to H^*.

(2) line 5 on the second paragraph of page 388, change $A(\mathbb{C})$ to $A(U)$.

References

[1] Y. André, Mumford-Tate groups of mixed Hodge structures and the theorem of the fixed part. *Comp. Math.* **82** (1992), 1–24.

[2] G. Faltings, Arakelov's Theorem for abelian varieties. *Inv. Math.* **73**, 1983, 337–347.

[3] J. Steenbrink & S. Zucker, Variation of the mixed Hodge structure. I. *Inv. Math.* **80** (1985), 489–542.