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Erratum for 'Geometric Height Inequalities and the Kodaira–Spencer Map'*

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(1) Reference [2] on p. 44, line 2, should be [3]; reference [4] on p. 45, beginning of last paragraph, should be [5]; reference [5] on p. 46, line 7, should be [6]; reference [6] in the beginning of section 3 should be [7].

(2) Two points in Section 4 of the above paper need clarification. Firstly, the base change to B that occurs at the beginning needs to be a separable one if the assumption about the Kodaira–Spencer map is to be preserved. Secondly, the descent argument near the bottom of p. 52 only works when the map $Y \to X_B$ is also separable. Therefore, the proof from the beginning of Section 4 up to the italicized statement on p. 53 is incomplete. We need to correct as follows:

If the map $Y \to X$ is separable, so is the base change $B \to S$ and the map $Y \to X'$ and the argument is correct as it stands. If $Y \to X$ is inseparable, we can factor it (after blowing up, if necessary) to $Y \to Y' \to X$ where $\rho\colon Y \to Y'$ is purely inseparable and $g\colon Y' \to X$ is separable. The map $P\colon T \to X$ lifts to $t_P\colon T \to Y$; let $t'\colon T \to Y'$ denote the composition $\rho \circ t_P$. Now, since $\rho\colon Y \to Y'$ is purely inseparable, there is a non-trivial kernel for the map $\Omega_{Y'} \to \rho_*(\Omega_Y)$. Let $L' \subset \Omega_{Y'}$ be a saturated line subsheaf contained in this kernel. Then the map $t'^*\Omega_{Y'} \to \Omega_T$ factors through $t'^*\rho_*(\Omega_Y)$:

$$t'^*\Omega_{Y'} = t_P^*\rho^*\Omega_{Y'} \to t_P^*\rho^*\rho_*\Omega_Y \to t_P^*\Omega_Y \to \Omega_T.$$

In particular, $t'^*L' \hookrightarrow t'^*\Omega_{Y'} \to \Omega_T$ is zero. But since $Y' \to X$ is separable, so that $\Omega_{Y'}$ and $g^*\Omega_X$ are generically equal, there is also a line subsheaf $Q \subset g^*(\Omega_X)$ which also vanishes when pulled-back to T and mapped down to Ω_T. Now we can apply the descent of the proof in Section 4.

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