CORRECTION TO 'CALABI-YAU TRIANGULATED CATEGORIES'

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The author is grateful to Guodong Zhou [3] and to Bill Crawley-Boevey and Andrew Hubery [1] for pointing out that in the definition of a right Serre functor

$$(S, \sigma) : \mathcal{T} \to \mathcal{T}$$

in section 2.6 of [2], a condition of compatibility between the isomorphism $\sigma : S\Sigma \to \Sigma S$ and the trace maps t_X is needed or else the notions of 'weakly Calabi-Yau' and 'Calabi-Yau' will be the same. The correct definition is as follows: A *right Serre functor for* $\mathcal{T}$ is given by a triangle functor $(S, \sigma) : \mathcal{T} \to \mathcal{T}$ together with a family of isomorphisms (called *trace maps*)

$$t_X : \mathcal{T}(?, SX) \to D\mathcal{T}(X, ?)$$

functorial in $X \in \mathcal{T}$ and such that for all $X \in \mathcal{T}$, we have

$$t_X \circ \Sigma^{-1} \circ (\sigma X)_* = -(D\Sigma) \circ (t_{\Sigma X}\Sigma).$$

Notice the minus sign. It is needed in the proof of the fact that $\mathcal{T}$ admits a right Serre functor, iff, for each object X of $\mathcal{T}$, the functor

$$D\mathcal{T}(X, ?) : \mathcal{T}^{op} \to \mathsf{Mod}\, k$$

is representable.

References

[1] W. Crawley-Boevey and A. Hubery, electronic message, December 2008.
[2] B. Keller, Calabi-Yau triangulated categories, in: Trends in Representation Theory of Algebras, edited by A. Skowroński, European Mathematical Society, Zurich, 2008.
[3] Guodong Zhou, oral communication, July 2008.

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