ERRATUM TO REMARK 11.1 OF “FUKAYA CATEGORIES AND PICARD-LEFSCHETZ THEORY”

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Abstract. We note an error in [1, Remark 11.1], pointed out by Zinger (who I would like to thank). This subject is discussed thoroughly in [2], but we provide a short summary here which focuses on the effect on [1].

The alternative sign convention suggested in [1, Remark 11.1] is incorrect, which means that it does not yield a topology on the determinant line bundle, as pointed out in [2, Remark 3.1]. In the general framework of [2], the intention of the Remark was to take the determinant line bundle as previously constructed in [1, Section 11a], and to pull back its topology by applying the discontinuous automorphism $(-1)^{(\delta-1)/2}$, where $\delta$ is the dimension of the cokernel of the Fredholm operator $D$. Applying these automorphisms changes the original isomorphism [1, Equation (11.2)] by

$$(-1)^{\delta_1(\delta_1-2)/2+\delta_2(\delta_2-1)/2+(\delta_1+\delta_2)(\delta_1+\delta_2-1)/2} = (-1)^{\delta_1\delta_2},$$

which yields

$$\left(\bigwedge_i w_{1,i}^\vee \land \bigwedge_i v_{1,i}\right) \otimes \left(\bigwedge_i w_{2,i}^\vee \land \bigwedge_i v_{2,i}\right) \longrightarrow$$

$$(-1)^{\delta_2 \text{index} (D_1)} \left(\bigwedge_i w_{1,i}^\vee \land \bigwedge_i w_{2,i}^\vee\right) \otimes \left(\bigwedge_i v_{1,i} \land \bigwedge_i v_{2,i}\right)$$

(retaining the sign, which corrects the wrong expression in [1, Remark 11.1]). Similarly, [1, Equation (11.3)] acquires a sign $(-1)^{n(n-1)/2+(n-k)(n-k-1)/2}$, which corresponds to reversing the order of the $f_i^\vee$ (as stated correctly in [1, Remark 11.1]).

References