CORRECTION TO "A MIXED INVARIANT OF NONORIENTABLE SURFACES IN EQUIVARIANT KHOVANOV HOMOLOGY"

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The problem. In the proof of Proposition 3.7, in the explanation of Morrison-Walker-Wedrich's proof [MWW22] of invariance under the sweep-around move, we omitted a key step. We displayed a diagram

$$\begin{array}{ccccccccc} & & \mathcal{C}_0^-(L_+^0) & \to \cdots \to & \mathcal{C}_0^-(L_+^i) & \to \cdots \to & \mathcal{C}_0^-(L_+^\ell) & & \\ & \nearrow & \downarrow\cong & & \downarrow\cong & & \downarrow\cong & \searrow & \\ \mathcal{C}^-(L) & & & & & & & & \mathcal{C}^-(L') \\ & \searrow & & & & & & \nearrow & \\ & & \mathcal{C}_0^-(L_-^0) & \to \cdots \to & \mathcal{C}_0^-(L_-^i) & \to \cdots \to & \mathcal{C}_0^-(L_-^\ell) & & \end{array}$$

and asserted that the first and last triangles clearly commute. This is wrong.

The correction. To guarantee that these triangles commute, one needs to multiply the vertical maps by $X_p - X_q$, where p and q are points on the opposite side of the crossing introduced by the RI move. To make the rest of the diagram commute, the remaining vertical arrows must be multiplied by $X_p - X_q$. This is explained clearly both in the original reference [MWW22], for Khovanov-Rozansky homology, and in Nahm's paper [Nah, Section 4.5], for the Bar-Natan complex.

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References

[MWW22] Scott Morrison, Kevin Walker, and Paul Wedrich, *Invariants of 4-manifolds from Khovanov-Rozansky link homology*, Geom. Topol. **26** (2022), no. 8, 3367–3420.

[Nah] Gheehyun Nahm, *Basepoints in Khovanov homology and nonorientable surfaces*, arXiv:2605.08457.

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