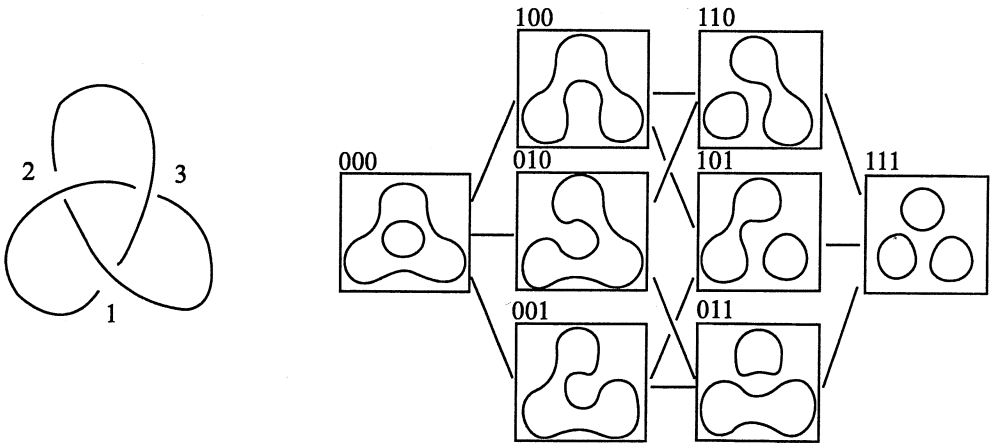
Definition of the Khovanov homology

Example 1. The Kauffman states of the left diagram are like these.



Example 2. The enhance states of state 000 in **Ex.**1 are like these.

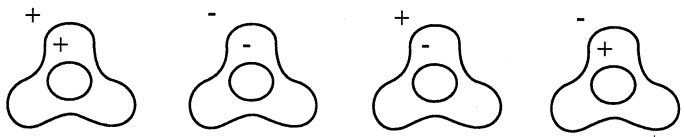
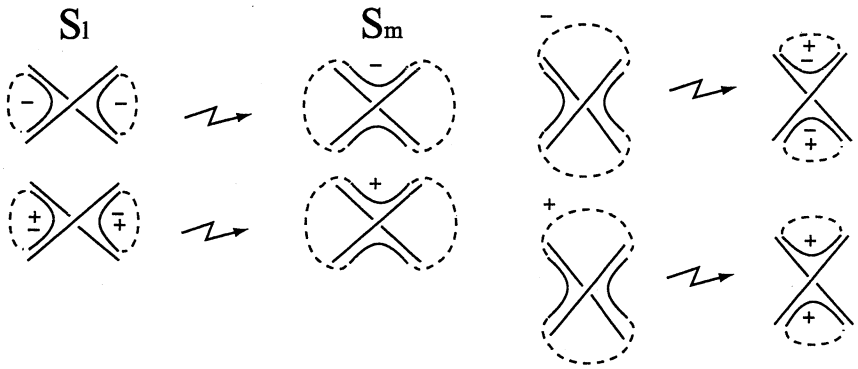
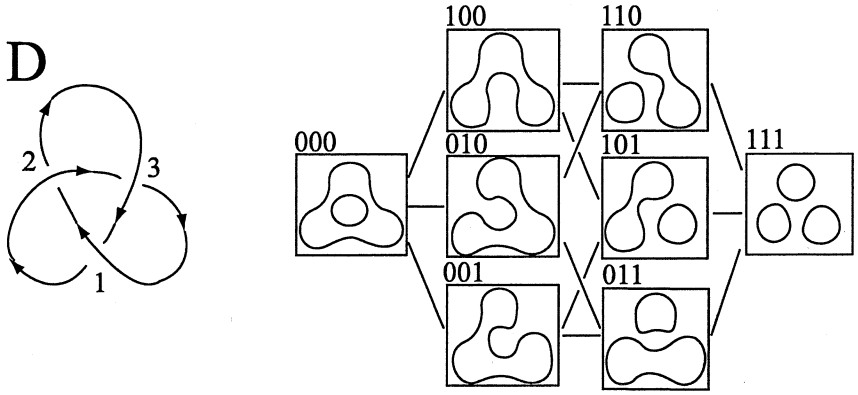


Figure1: Pairs of incident enhanced states



The Khovanov complex for the diagram below

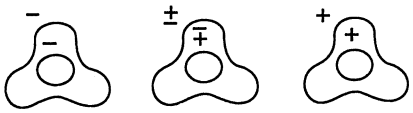


$$i(S) = \frac{3-\sigma(s)}{2} \quad j(S) = -\frac{\sigma(s)+2\tau(S)-9}{2}$$

$i = 0$;

$\tau = -2, \quad 0, \quad 2$

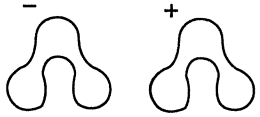
$j = \ 5, \quad 3, \quad 1$



$i = 1$;

$\tau = -1, \quad 1$

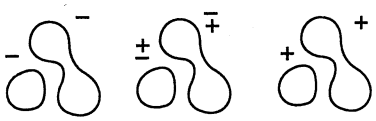
$j = \ 5, \quad 3$



$i = 2$;

$\tau = -2, \quad 0, \quad 2$

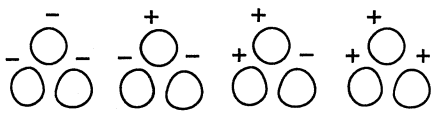
$j = \ 7, \quad 5, \quad 3$

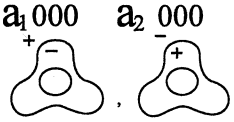
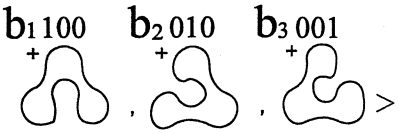


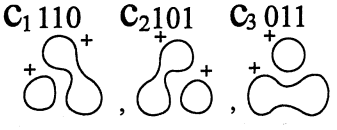
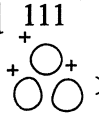
$i = 3$;

$\tau = -3, \quad -1, \quad 1, \quad 3$

$j = \ 9, \quad 7, \quad 5, \quad 3$



$0 \longrightarrow C^{0,3}(D) =<$  $> \xrightarrow{\partial^{0,3}} C^{1,3}(D) =<$  $>$

$\xrightarrow{\partial^{1,3}} C^{2,3}(D) =<$  $> \xrightarrow{\partial^{2,3}} C^{3,3}(D) =<$  $> \longrightarrow 0$

$(b_1, c_1) = -1$.

结合修改.

$(b_2, c_2) = 0$, $(b_2, c_3) = 1$.

Related topics on the Khovanov homology

1 The Khovanov polynomials for alternating knots

References

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[4] E. S. Lee, *On Khovanov invariant for alternating links*, arXiv:math.GT/0210213.

2 Relation to Conway mutation

References

[1] S. Wehrli, *Khovanov homology and Conway mutation*, arXiv:math.GT/0301312.

3 Relation to Link cobordisms

References

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[3] M. Khovanov, *An invariant of tangle cobordisms*, arXiv:math.QA/0207264.

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4 Relation to Heegaard Floer homology

References

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[4] J. Rasmussen, *Floer homology and knot complements*, arXiv:math.GT/0306378.

5 The Khovanov polynomial for the links such that $V(L)$ is trivial

References

[1] A. Shumakovitch, *KhoHo*, Basel 2002, see http://www.geometrie.ch/KhoHo/

[2] M. Thistlethwaite, *Links with trivial Jones polynomial*, J. Knot Theory Ramifications 10 (2001), no. 4, 641- 643.