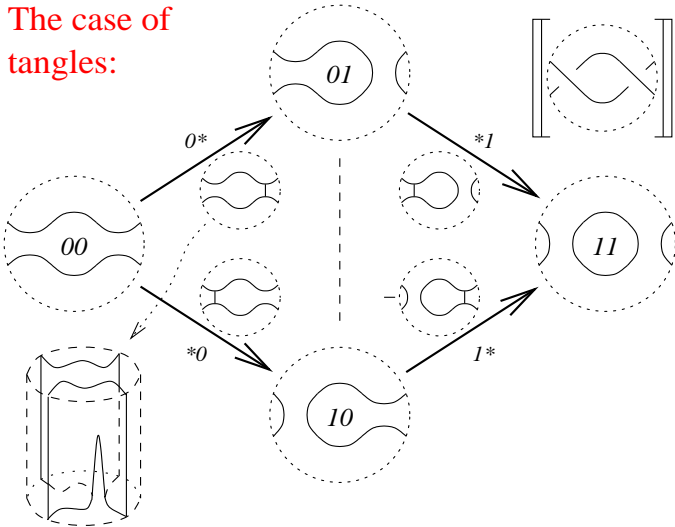


Local Khovanov Homology (2)

The case of tangles:



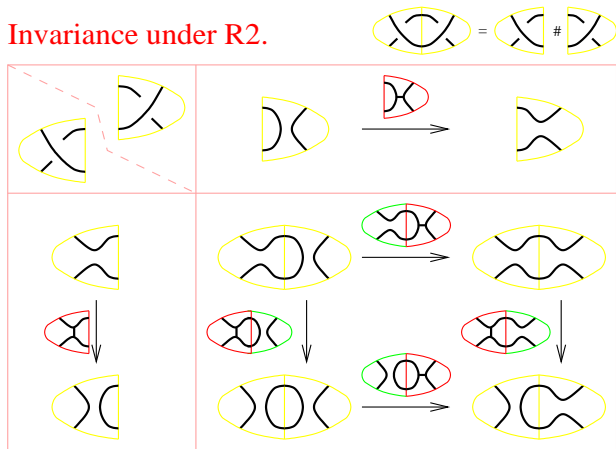
The Reduction Lemma. If ϕ is an isomorphism then the complex

$$[C] \xrightarrow{\begin{pmatrix} \alpha \\ \beta \end{pmatrix}} \begin{bmatrix} b_1 \\ D \end{bmatrix} \xrightarrow{\begin{pmatrix} \phi & \delta \\ \gamma & \epsilon \end{pmatrix}} \begin{bmatrix} b_2 \\ E \end{bmatrix} \xrightarrow{(\mu \ \nu)} [F]$$

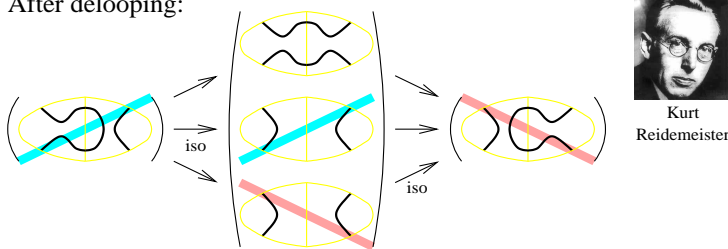
is isomorphic to the (direct sum) complex

$$[C] \xrightarrow{\begin{pmatrix} 0 \\ \beta \end{pmatrix}} \begin{bmatrix} b_1 \\ D \end{bmatrix} \xrightarrow{\begin{pmatrix} \phi & 0 \\ 0 & \epsilon - \gamma\phi^{-1}\delta \end{pmatrix}} \begin{bmatrix} b_2 \\ E \end{bmatrix} \xrightarrow{(0 \ \nu)} [F]$$

Invariance under R2.



After delooping:



- <http://www.math.toronto.edu/~drorbn/papers/Cobordism/>
- <http://www.math.toronto.edu/~drorbn/papers/FastKh/>
- <http://www.math.toronto.edu/~drorbn/Talks/Hamburg-1208/>

I mean business.

T(7,6)



says



Old techniques:

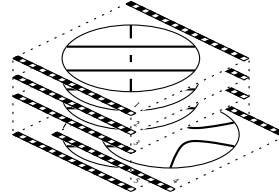
~1,000 years,
~1Ggb RAM.

(now down to seconds)

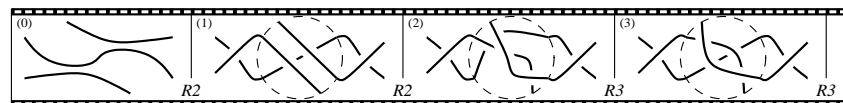
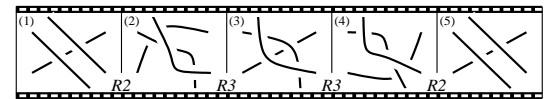
$\dim_j H_r$ is given by:

$j \setminus r$	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
57																					
55																				1	
53																			1	1	
51																			2	1	
49																			3	1	
47																			1		
45																			2	1	
43																			1	2	
41																			1	1	
39																			1	1	
37																			1		
35																			1		
33																			1		
31																			1		
29																			1		

Functoriality / cobordisms.



M. Jacobsson



J. Rasmussen: Leads to a no-analysis proof of a conjecture by Milnor.

A more general theory: Remove G and NC, add

$$4Tu: \begin{matrix} 1 & 2 \\ 3 & 4 \end{matrix} + \begin{matrix} \text{crossing} \\ \text{crossing} \end{matrix} = \begin{matrix} \text{link} \\ \text{link} \end{matrix} + \begin{matrix} \text{link} \\ \text{link} \end{matrix}$$

(minor further revisions are necessary)

"God created the knots,
all else in topology is the work of mortals"

Leopold Kronecker (modified)



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<http://katlas.org>