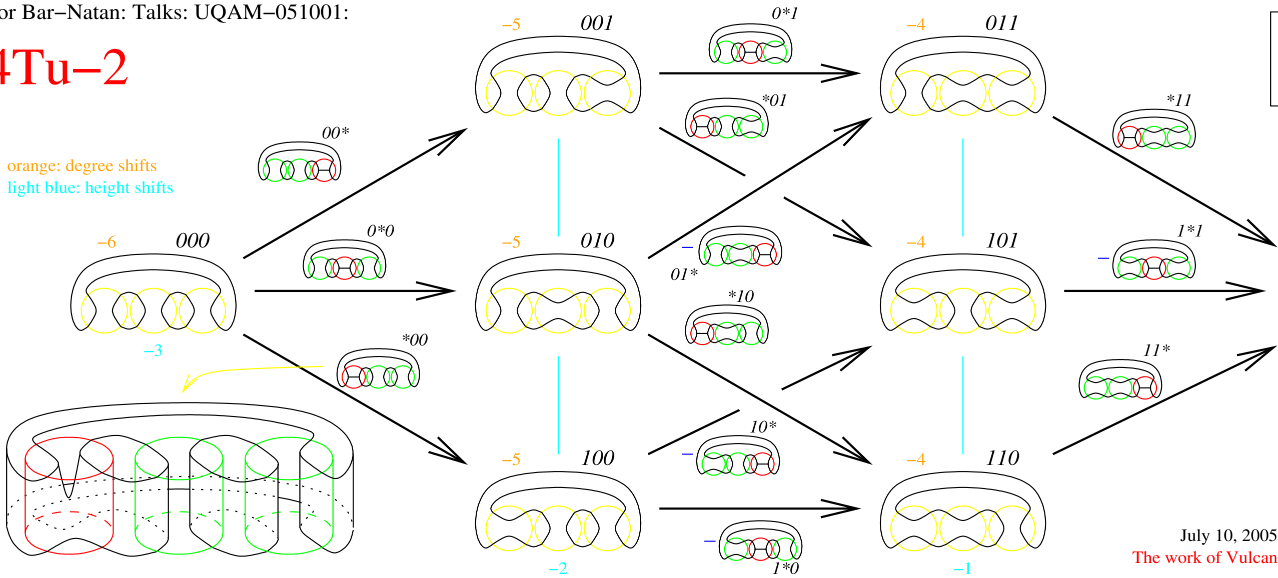
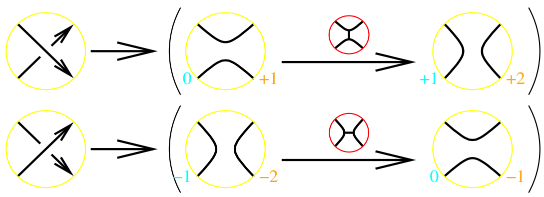
4Tu–2

orange: degree shifts
light blue: height shifts



July 10, 2005
The work of Vulcan

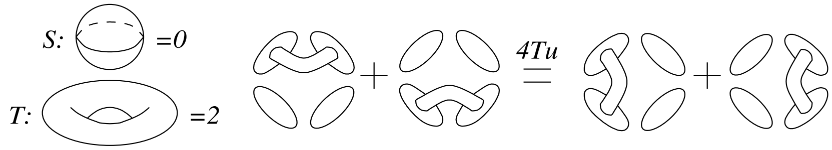
General Crossings



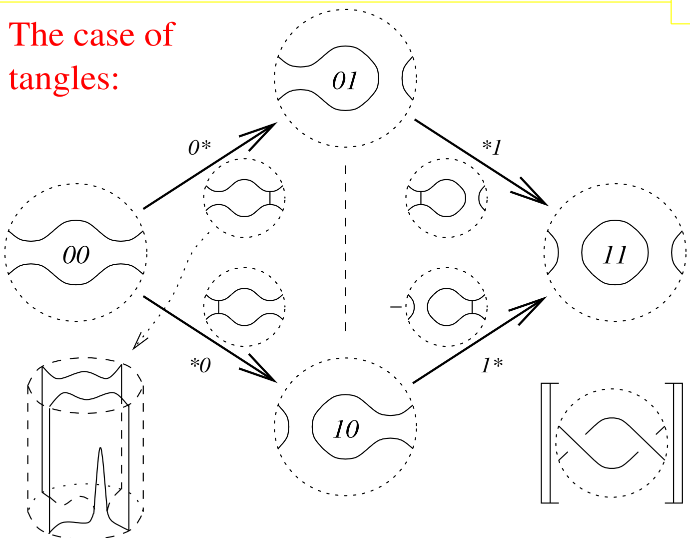
Where does it live?

In *Kom(Mat(<Cob> / {S, T, 4Tu})) / homotopy*

Kom: Complexes Mat: Matrices Cob: Cobordisms <...>: Formal lin. comb.

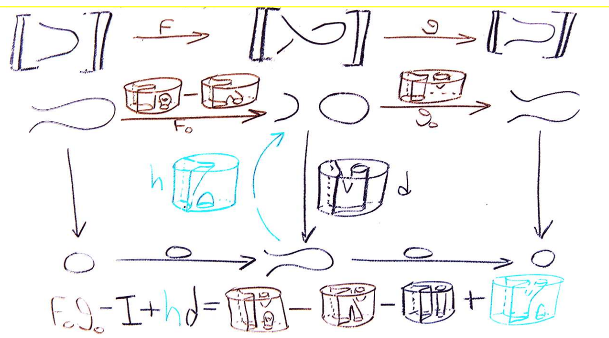


The case of tangles:



Invariant!

Kurt Reidemeister



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

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

is isomorphic to the (direct sum) complex

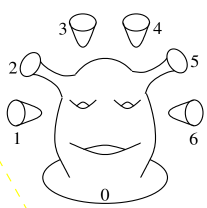
$$[C] \xrightarrow{\begin{pmatrix}0\\ \beta\end{pmatrix}} \begin{bmatrix} b_1 \\ D \end{bmatrix} \xrightarrow{\begin{pmatrix}\phi & 0 \\ 0 & \epsilon-\gamma\phi^{-1}\delta\end{pmatrix}} \begin{bmatrix} b_2 \\ E \end{bmatrix} \xrightarrow{\begin{pmatrix}0 & \nu\end{pmatrix}} [F]$$

The work of Naot.

<surfaces>/4Tu is freely generated by Shrek surfaces

Gad Naot

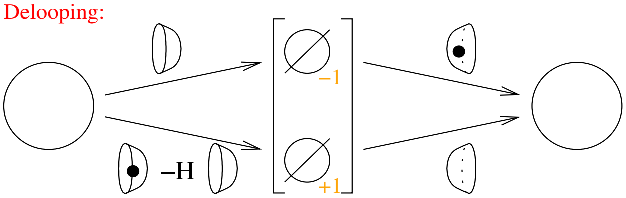
A Shrek surface with 7 boundaries (one distinguished), 3 handles and 2 tubes



שרעק

Let ● denote a tube to the distinguished component (the curtain), and let H denote a handle on the curtain. Then

Delooping:

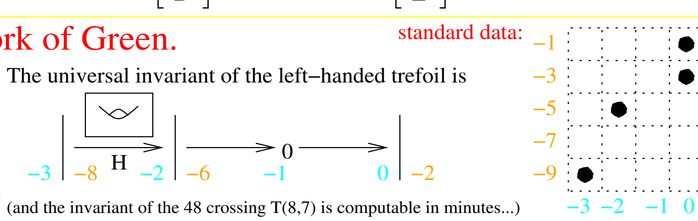


... so the invariant is valued in complexes over a category with just one object and morphisms in Z[H]; all is graded and degH=–2.

The work of Green.

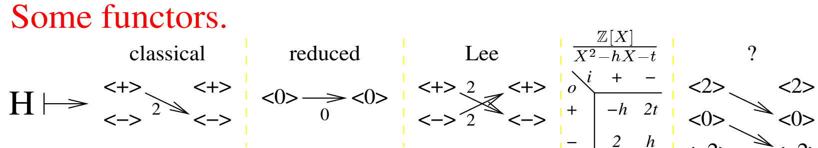
Jeremy Green

The universal invariant of the left–handed trefoil is



(and the invariant of the 48 crossing T(8,7) is computable in minutes...)

Some functors.



(Lee's spectral sequence and Rasmussen's invariant also recoverable)

http://www.math.toronto.edu/~drorbn/Talks/UQAM–051001/

More at http://www.math.toronto.edu/~drorbn/Talks/UQAM-051001/