

Title. Computing the Zombian of an Unfinished Columbarium

Abstract. This talk will be so abstract that even its title doesn't make sense. Yet it will have a concrete part whose only prerequisite is Linear Algebra I.

row ops \leftrightarrow left multiply

$$\begin{pmatrix} \dots \\ \dots \end{pmatrix} \begin{pmatrix} \dots \\ \dots \end{pmatrix}$$

ZPUC: Zombie Processed Unfinished Columbarium

$$\begin{pmatrix} A & B \\ C & D \end{pmatrix} \xrightarrow{\begin{pmatrix} A^{-1} & 0 \\ 0 & I \end{pmatrix} \bullet} \begin{pmatrix} I & A^{-1}B \\ C & D \end{pmatrix} \xrightarrow{\begin{pmatrix} I & 0 \\ -C & I \end{pmatrix} \bullet} \begin{pmatrix} I & A^{-1}B \\ 0 & -CA^{-1}B+D \end{pmatrix} \xrightarrow{\begin{pmatrix} I & -A^{-1}B \\ 0 & I \end{pmatrix} \bullet} \begin{pmatrix} I & 0 \\ 0 & -CA^{-1}B+D \end{pmatrix}$$

Q1. What if A is not invertible?

Q2. What are ZPUC?

Q3. Apply to Alexander? Is the result a tangle invariant?

Need to prepare:

- * Bullets for the talk.
- * A definition of Alexander.

1. Thanks, goals are modest, IBL.
2. Columbaria.
3. Zombians.
4. The Kauffman example, divide and conquer.
5. Proofs of invariance, skein relations.
6. Computing zombians of unfinished columbaria is often fun and challenging!
7. The Temperley-Lieb algebra.
8. Sums
9. Khovanov homology, the Kontsevich integral, HFK, signatures, etc.
10. Requirements: * Fast!
 - * Future zombies need not know even the size of the task for today's zombies.
 - * Future zombies should be left with a quickly-completeable task.
11. The pairing of two partial Zombian computations.
12. ZPUC: Zombie Processed Unfinished Columbaria.
13. The Alexander formula.
14. Thin matrices.
14. IBL session: How to compute the determinant of a 1000x1000 matrix that has a 50x50 unknown box.
15. Homework: * What is A is not invertible?
 - * Pairings? ZPUCs?
 - * Apply to Alexander! A tangle invariant? Agrees with known ones? Useful for skein relations?

