

<p>Written Chern-Simons</p> <p><b>u-knots</b></p> <p>u-knots are usual knots:</p> <p>=PA <math>\langle \text{R} \times 23 \rangle_0</math> legs "Knots in <math>\mathbb{R}^3</math>"</p>	<p><math>1-1 \rightarrow</math></p> <p><b>v-knots</b></p> <p>v-knots are virtual knots:</p> <p>=PA <math>\langle \text{R} \times 23 \rangle_0</math> =CA <math>\langle \text{R} \times 23 \rangle_0</math> = Knots on surfaces, modulo stabilization:</p>	<p><math>\text{onto} \rightarrow</math></p> <p><b>w-knots</b></p> <p>w is for welded, weakly v, and warmup:</p> <p>4 <math>\{w\text{-knots}\} = \{v\text{-knots}\} / (\text{OC})</math> where OC is Overcrossings Commute:</p> <p>Related to "movies of flying rings" to knotted tubes in 4-space, and to "basis conjugating automorphisms of free groups".</p> <p>McCool Goldsmith Fenn Rimanyi Rourke Satoh Brendle Hatcher</p>
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<p><math>\mathcal{K}^u</math></p> <p>Expansion exists, Eg., using the Kontsevich integral.</p> <p>No homomorphic expansion!</p> <p><math>\downarrow \mathcal{Z}^u</math></p> <p><math>\mathcal{A}^u</math></p> <p><math>4T</math></p> <p><math>4T</math>:</p>	<p><math>\xrightarrow{\text{wide open}}</math></p> <p><math>\mathcal{K}^v</math></p> <p><math>\downarrow \mathcal{Z}^v</math></p> <p><math>\mathcal{A}^v</math></p> <p><math>6T</math></p> <p><math>6T</math>:</p>	<p><math>\mathcal{K}^w</math></p> <p>Homomorphic <math>\mathcal{Z}^w</math> exists!</p> <p><math>\downarrow \mathcal{Z}^w</math></p> <p><math>\mathcal{A}^w</math></p> <p><math>TC</math></p> <p><math>4T</math>:</p>
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$\downarrow \mathcal{U}^u$

$U(\mathfrak{g})^{\otimes \mathbb{C}}$

For any metrized f.d. Lie algebra  $\mathfrak{g}$

$\downarrow \mathcal{U}^v$

$U(\mathfrak{g}_+ \oplus \mathfrak{g}_-)^{\otimes \mathbb{C}}$

For any f.d. Lie bialgebra  $\mathfrak{g} = \mathfrak{g}_+ \oplus \mathfrak{g}_-$

$\downarrow \mathcal{U}^w$  Today

$U(\mathbb{I}\mathfrak{g})^{\otimes \mathbb{C}}$

For any f.d. Lie algebra  $\mathfrak{g}$