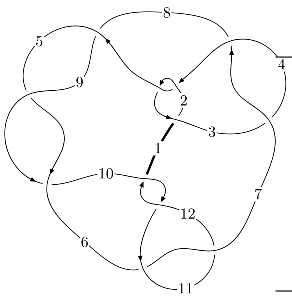
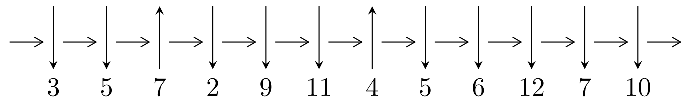
$12n_{0155}$ $(K12n_{0155})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$6{,}11 \xrightarrow[c_6]{} 3{,}7 \xrightarrow[c_3]{} 4 \xrightarrow[c_{11}]{} 12 \xrightarrow[c_{10}]{} 10 \xrightarrow[c_{12}]{} 1 \xrightarrow[c_9]{} 9 \xrightarrow[c_5]{} 5 \xrightarrow[c_2]{} 2 \xrightarrow[c_8]{} 8 \twoheadrightarrow c_1, c_4, c_7$$

Ideals for irreducible components[2] of $X_{\mathbf{par}}$

$$I_1^u = \langle -u^{51} - u^{50} + \cdots + b - 1,\ -2u^{51} - 2u^{50} + \cdots + a - 3,\ u^{52} + 2u^{51} + \cdots + 2u + 1 \rangle$$
$$I_2^u = \langle u^7 - u^5 + 2u^3 + b - u + 1,\ u^7 - u^5 + u^4 + 2u^3 - u^2 + a + 2,\ u^8 - u^7 - u^6 + 2u^5 + u^4 - 2u^3 + 2u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 60 representations.

[1] The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2] All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I.

$$I_1^u = \langle -u^{51}-u^{50}+\cdots+b-1,\ -2u^{51}-2u^{50}+\cdots+a-3,\ u^{52}+2u^{51}+\cdots+2u+1\rangle$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 2u^{51}+2u^{50}+\cdots-3u+3 \\ u^{51}+u^{50}+\cdots-2u^2+1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^{51}-8u^{49}+\cdots-5u+2 \\ 2u^{51}+u^{50}+\cdots+u+1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^3 \\ u^5-u^3+u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^5-u \\ -u^7+u^5-2u^3+u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^5+u \\ u^5-u^3+u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^{10}+u^8-2u^6+u^4-u^2+1 \\ -u^{10}+2u^8-3u^6+2u^4-u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^{51}+u^{50}+\cdots-4u+3 \\ u^{51}+u^{50}+\cdots+u+1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^{15}+2u^{13}-4u^{11}+4u^9-4u^7+4u^5-2u^3+2u \\ -u^{15}+3u^{13}-6u^{11}+7u^9-6u^7+4u^5-2u^3+u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -u^{51}+2u^{50}+\cdots-14u-3$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{52} + 15u^{51} + \cdots + 34u + 1$
c_2, c_4	$u^{52} - 9u^{51} + \cdots - 10u + 1$
c_3, c_7	$u^{52} - u^{51} + \cdots + 640u + 256$
c_5, c_8, c_9	$u^{52} + 2u^{51} + \cdots + 336u + 49$
c_6, c_{11}	$u^{52} - 2u^{51} + \cdots - 2u + 1$
c_{10}, c_{12}	$u^{52} + 18u^{51} + \cdots + 14u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{52} + 53y^{51} + \cdots - 706y + 1$
c_2, c_4	$y^{52} - 15y^{51} + \cdots - 34y + 1$
c_3, c_7	$y^{52} - 51y^{51} + \cdots - 1622016y + 65536$
c_5, c_8, c_9	$y^{52} - 26y^{51} + \cdots - 65170y + 2401$
c_6, c_{11}	$y^{52} - 18y^{51} + \cdots - 14y + 1$
c_{10}, c_{12}	$y^{52} + 34y^{51} + \cdots - 14y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.661298 + 0.748302I$ $a = -0.320274 + 0.754666I$ $b = -0.79199 - 1.48215I$	$0.80822 + 2.47111I$	$-6.26058 - 3.26854I$
$u = 0.661298 - 0.748302I$ $a = -0.320274 - 0.754666I$ $b = -0.79199 + 1.48215I$	$0.80822 - 2.47111I$	$-6.26058 + 3.26854I$
$u = -0.636633 + 0.816820I$ $a = 0.268660 + 0.935747I$ $b = 2.46939 - 1.06759I$	$6.10406 - 8.66203I$	$-5.62163 + 4.32258I$
$u = -0.636633 - 0.816820I$ $a = 0.268660 - 0.935747I$ $b = 2.46939 + 1.06759I$	$6.10406 + 8.66203I$	$-5.62163 - 4.32258I$
$u = -1.036160 + 0.045183I$ $a = 0.56922 - 2.81424I$ $b = 0.23556 - 2.03154I$	$-4.76535 + 2.18839I$	$-14.6770 - 3.6633I$
$u = -1.036160 - 0.045183I$ $a = 0.56922 + 2.81424I$ $b = 0.23556 + 2.03154I$	$-4.76535 - 2.18839I$	$-14.6770 + 3.6633I$
$u = 0.723846 + 0.632329I$ $a = 0.194221 - 1.378370I$ $b = 1.63877 + 0.76596I$	$-0.43554 - 1.57909I$	$-9.64188 + 1.77235I$
$u = 0.723846 - 0.632329I$ $a = 0.194221 + 1.378370I$ $b = 1.63877 - 0.76596I$	$-0.43554 + 1.57909I$	$-9.64188 - 1.77235I$
$u = 1.04031$ $a = 0.375292$ $b = -0.518107$	-6.36986	-13.6620
$u = -0.657608 + 0.692008I$ $a = 1.36055 - 0.47884I$ $b = 0.330991 - 0.978148I$	$-1.297150 - 0.510740I$	$-6.51784 - 0.83295I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.657608 - 0.692008I$ $a = 1.36055 + 0.47884I$ $b = 0.330991 + 0.978148I$	$-1.297150 + 0.510740I$	$-6.51784 + 0.83295I$
$u = -0.666205 + 0.808385I$ $a = -0.331437 - 0.469968I$ $b = -2.08963 + 0.58134I$	$7.27982 - 1.78274I$	$-3.98925 - 0.13082I$
$u = -0.666205 - 0.808385I$ $a = -0.331437 + 0.469968I$ $b = -2.08963 - 0.58134I$	$7.27982 + 1.78274I$	$-3.98925 + 0.13082I$
$u = -0.806239 + 0.701530I$ $a = -0.587597 + 0.348457I$ $b = -0.210379 + 0.054742I$	$2.80086 + 2.09505I$	$-2.50659 - 3.48544I$
$u = -0.806239 - 0.701530I$ $a = -0.587597 - 0.348457I$ $b = -0.210379 - 0.054742I$	$2.80086 - 2.09505I$	$-2.50659 + 3.48544I$
$u = 1.063220 + 0.121546I$ $a = -2.29627 + 1.25450I$ $b = -1.38281 + 0.68102I$	$0.93793 - 1.58244I$	$-10.84568 + 1.37730I$
$u = 1.063220 - 0.121546I$ $a = -2.29627 - 1.25450I$ $b = -1.38281 - 0.68102I$	$0.93793 + 1.58244I$	$-10.84568 - 1.37730I$
$u = 0.549487 + 0.745372I$ $a = -0.521065 - 0.048868I$ $b = 0.799139 - 0.412000I$	$-1.81149 + 1.27627I$	$-3.31406 - 1.04966I$
$u = 0.549487 - 0.745372I$ $a = -0.521065 + 0.048868I$ $b = 0.799139 + 0.412000I$	$-1.81149 - 1.27627I$	$-3.31406 + 1.04966I$
$u = -0.973478 + 0.497457I$ $a = -1.35010 - 1.41893I$ $b = -0.920949 + 0.416007I$	$3.12207 + 4.60453I$	$-8.72425 - 5.65975I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.973478 - 0.497457I$ $a = -1.35010 + 1.41893I$ $b = -0.920949 - 0.416007I$	$3.12207 - 4.60453I$	$-8.72425 + 5.65975I$
$u = 1.099660 + 0.097397I$ $a = 2.11231 - 2.23460I$ $b = 1.53001 - 1.70626I$	$-0.24824 - 8.05886I$	$-12.40052 + 5.70179I$
$u = 1.099660 - 0.097397I$ $a = 2.11231 + 2.23460I$ $b = 1.53001 + 1.70626I$	$-0.24824 + 8.05886I$	$-12.40052 - 5.70179I$
$u = -1.11145$ $a = 1.48524$ $b = 1.21896$	-7.36266	-8.96100
$u = -0.905213 + 0.681246I$ $a = -0.523152 - 0.438777I$ $b = -0.1179880 - 0.0609129I$	$2.49405 + 3.22105I$	$-3.32606 - 3.39208I$
$u = -0.905213 - 0.681246I$ $a = -0.523152 + 0.438777I$ $b = -0.1179880 + 0.0609129I$	$2.49405 - 3.22105I$	$-3.32606 + 3.39208I$
$u = 0.856090 + 0.776847I$ $a = -0.786022 - 0.932466I$ $b = -0.57351 - 1.38717I$	$10.43740 + 0.66966I$	$-3.01264 + 0.I$
$u = 0.856090 - 0.776847I$ $a = -0.786022 + 0.932466I$ $b = -0.57351 + 1.38717I$	$10.43740 - 0.66966I$	$-3.01264 + 0.I$
$u = -1.015300 + 0.553492I$ $a = 1.73668 + 0.33530I$ $b = 0.221364 - 1.300870I$	$2.49928 - 1.45715I$	$-9.46738 + 0.I$
$u = -1.015300 - 0.553492I$ $a = 1.73668 - 0.33530I$ $b = 0.221364 + 1.300870I$	$2.49928 + 1.45715I$	$-9.46738 + 0.I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.972910 + 0.643628I$ $a = -1.12101 - 2.08154I$ $b = 1.67842 - 1.59230I$	$-1.23183 - 3.44766I$	$-10.73445 + 3.25709I$
$u = 0.972910 - 0.643628I$ $a = -1.12101 + 2.08154I$ $b = 1.67842 + 1.59230I$	$-1.23183 + 3.44766I$	$-10.73445 - 3.25709I$
$u = 0.884417 + 0.769320I$ $a = 1.04291 + 1.44163I$ $b = -0.05794 + 1.42188I$	$10.35090 - 6.48169I$	$-3.29234 + 5.33033I$
$u = 0.884417 - 0.769320I$ $a = 1.04291 - 1.44163I$ $b = -0.05794 - 1.42188I$	$10.35090 + 6.48169I$	$-3.29234 - 5.33033I$
$u = -0.995994 + 0.663488I$ $a = -0.447793 + 0.743729I$ $b = -0.197171 + 1.217400I$	$-2.30244 + 5.77043I$	$-8.73703 - 4.68081I$
$u = -0.995994 - 0.663488I$ $a = -0.447793 - 0.743729I$ $b = -0.197171 - 1.217400I$	$-2.30244 - 5.77043I$	$-8.73703 + 4.68081I$
$u = 1.005230 + 0.684675I$ $a = 1.66351 + 1.36728I$ $b = -0.93378 + 1.89685I$	$-0.22005 - 7.93959I$	$-8.35668 + 7.99048I$
$u = 1.005230 - 0.684675I$ $a = 1.66351 - 1.36728I$ $b = -0.93378 - 1.89685I$	$-0.22005 + 7.93959I$	$-8.35668 - 7.99048I$
$u = 1.040490 + 0.652647I$ $a = 0.837700 - 0.810359I$ $b = 1.025560 + 0.617772I$	$-3.23709 - 6.60394I$	0
$u = 1.040490 - 0.652647I$ $a = 0.837700 + 0.810359I$ $b = 1.025560 - 0.617772I$	$-3.23709 + 6.60394I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.020440 + 0.711207I$ $a = -0.20228 - 2.51624I$ $b = -2.10957 - 0.88029I$	$6.20768 + 7.49853I$	0
$u = -1.020440 - 0.711207I$ $a = -0.20228 + 2.51624I$ $b = -2.10957 + 0.88029I$	$6.20768 - 7.49853I$	0
$u = -1.036210 + 0.704214I$ $a = -0.19781 + 3.00542I$ $b = 2.71533 + 1.45235I$	$4.8974 + 14.3736I$	0
$u = -1.036210 - 0.704214I$ $a = -0.19781 - 3.00542I$ $b = 2.71533 - 1.45235I$	$4.8974 - 14.3736I$	0
$u = -0.316269 + 0.673477I$ $a = 0.152937 - 1.157570I$ $b = 0.964431 + 0.772467I$	$4.38303 + 5.94973I$	$-5.70519 - 4.98093I$
$u = -0.316269 - 0.673477I$ $a = 0.152937 + 1.157570I$ $b = 0.964431 - 0.772467I$	$4.38303 - 5.94973I$	$-5.70519 + 4.98093I$
$u = 0.702232$ $a = -0.797304$ $b = 0.0429664$	-1.05113	-9.14920
$u = -0.237887 + 0.635480I$ $a = -0.196476 + 0.636369I$ $b = -1.285860 - 0.135549I$	$5.12115 - 0.59863I$	$-4.16704 - 0.03207I$
$u = -0.237887 - 0.635480I$ $a = -0.196476 - 0.636369I$ $b = -1.285860 + 0.135549I$	$5.12115 + 0.59863I$	$-4.16704 + 0.03207I$
$u = 0.311034 + 0.368798I$ $a = -0.691540 - 1.071180I$ $b = 0.258704 + 0.649617I$	$-0.684234 - 1.109730I$	$-7.41214 + 5.86160I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.311034 - 0.368798I$ $a = -0.691540 + 1.071180I$ $b = 0.258704 - 0.649617I$	$-0.684234 + 1.109730I$	$-7.41214 - 5.86160I$
$u = -0.359182$ $a = 3.20503$ $b = 0.863998$	-2.10063	0.990710

II. $\boldsymbol{I_2^u = \langle u^7 - u^5 + 2u^3 + b - u + 1,\ u^7 - u^5 + u^4 + 2u^3 - u^2 + a + 2,\ u^8 - u^7 - u^6 + 2u^5 + u^4 - 2u^3 + 2u - 1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^7 + u^5 - u^4 - 2u^3 + u^2 - 2 \\ -u^7 + u^5 - 2u^3 + u - 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^7 + u^5 - u^4 - 2u^3 + u^2 - 2 \\ -u^7 + u^5 - 2u^3 + u - 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^5 - u \\ -u^7 + u^5 - 2u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^5 + u \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^5 + u \\ u^7 - u^5 + 2u^3 - u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^7 - u^4 - 2u^3 + u^2 - u - 2 \\ -2u^7 + 2u^5 - 4u^3 + 2u - 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -6u^7 + u^6 + 11u^5 - 8u^4 - 11u^3 + 7u^2 + 4u - 23$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^8$
c_3, c_7	u^8
c_4	$(u+1)^8$
c_5	$u^8+u^7-3u^6-2u^5+3u^4+2u-1$
c_6	$u^8-u^7-u^6+2u^5+u^4-2u^3+2u-1$
c_8, c_9	$u^8-u^7-3u^6+2u^5+3u^4-2u-1$
c_{10}	$u^8-3u^7+7u^6-10u^5+11u^4-10u^3+6u^2-4u+1$
c_{11}	$u^8+u^7-u^6-2u^5+u^4+2u^3-2u-1$
c_{12}	$u^8+3u^7+7u^6+10u^5+11u^4+10u^3+6u^2+4u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^8$
c_3, c_7	y^8
c_5, c_8, c_9	$y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1$
c_6, c_{11}	$y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1$
c_{10}, c_{12}	$y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.570868 + 0.730671I$ $a = -0.805639 - 0.183365I$ $b = 0.320534 - 0.633953I$	$-2.68559 + 1.13123I$	$-13.35119 - 0.17229I$
$u = 0.570868 - 0.730671I$ $a = -0.805639 + 0.183365I$ $b = 0.320534 + 0.633953I$	$-2.68559 - 1.13123I$	$-13.35119 + 0.17229I$
$u = -0.855237 + 0.665892I$ $a = -0.189481 - 1.310380I$ $b = -1.54709 - 0.16160I$	$0.51448 + 2.57849I$	$-6.04880 - 3.90294I$
$u = -0.855237 - 0.665892I$ $a = -0.189481 + 1.310380I$ $b = -1.54709 + 0.16160I$	$0.51448 - 2.57849I$	$-6.04880 + 3.90294I$
$u = -1.09818$ $a = 0.729394$ $b = 0.879647$	-8.14766	-20.2760
$u = 1.031810 + 0.655470I$ $a = 0.708845 - 0.169402I$ $b = 0.679246 + 0.851242I$	$-4.02461 - 6.44354I$	$-15.5815 + 4.6831I$
$u = 1.031810 - 0.655470I$ $a = 0.708845 + 0.169402I$ $b = 0.679246 - 0.851242I$	$-4.02461 + 6.44354I$	$-15.5815 - 4.6831I$
$u = 0.603304$ $a = -2.15684$ $b = -0.785038$	-2.48997	-20.7610

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^8)(u^{52}+15u^{51}+\cdots+34u+1)$
c_2	$((u-1)^8)(u^{52}-9u^{51}+\cdots-10u+1)$
c_3, c_7	$u^8(u^{52}-u^{51}+\cdots+640u+256)$
c_4	$((u+1)^8)(u^{52}-9u^{51}+\cdots-10u+1)$
c_5	$(u^8+u^7-3u^6-2u^5+3u^4+2u-1)(u^{52}+2u^{51}+\cdots+336u+49)$
c_6	$(u^8-u^7+\cdots+2u-1)(u^{52}-2u^{51}+\cdots-2u+1)$
c_8, c_9	$(u^8-u^7-3u^6+2u^5+3u^4-2u-1)(u^{52}+2u^{51}+\cdots+336u+49)$
c_{10}	$(u^8-3u^7+7u^6-10u^5+11u^4-10u^3+6u^2-4u+1)$ $\cdot(u^{52}+18u^{51}+\cdots+14u+1)$
c_{11}	$(u^8+u^7+\cdots-2u-1)(u^{52}-2u^{51}+\cdots-2u+1)$
c_{12}	$(u^8+3u^7+7u^6+10u^5+11u^4+10u^3+6u^2+4u+1)$ $\cdot(u^{52}+18u^{51}+\cdots+14u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^8)(y^{52}+53y^{51}+\cdots-706y+1)$
c_2, c_4	$((y-1)^8)(y^{52}-15y^{51}+\cdots-34y+1)$
c_3, c_7	$y^8(y^{52}-51y^{51}+\cdots-1622016y+65536)$
c_5, c_8, c_9	$(y^8-7y^7+19y^6-22y^5+3y^4+14y^3-6y^2-4y+1)$ $\cdot(y^{52}-26y^{51}+\cdots-65170y+2401)$
c_6, c_{11}	$(y^8-3y^7+7y^6-10y^5+11y^4-10y^3+6y^2-4y+1)$ $\cdot(y^{52}-18y^{51}+\cdots-14y+1)$
c_{10}, c_{12}	$(y^8+5y^7+11y^6+6y^5-17y^4-34y^3-22y^2-4y+1)$ $\cdot(y^{52}+34y^{51}+\cdots-14y+1)$