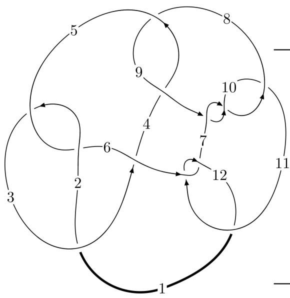
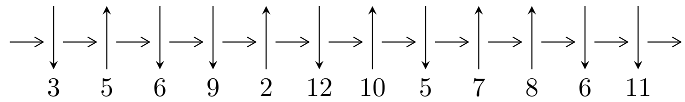
$12n_{0062}$ ($K12n_{0062}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 1.37658 \times 10^{65} u^{40} - 4.47424 \times 10^{65} u^{39} + \cdots + 1.06596 \times 10^{68} d + 6.96533 \times 10^{67}, \\
& 1.14112 \times 10^{66} u^{40} - 3.62494 \times 10^{66} u^{39} + \cdots + 4.26385 \times 10^{68} c + 2.46764 \times 10^{68}, \\
& 7.08052 \times 10^{74} u^{40} - 1.75227 \times 10^{75} u^{39} + \cdots + 1.49944 \times 10^{77} b - 5.67209 \times 10^{77}, \\
& 4.57210 \times 10^{73} u^{40} - 7.88614 \times 10^{75} u^{39} + \cdots + 1.19955 \times 10^{78} a - 7.69341 \times 10^{78}, \\
& u^{41} - 2u^{40} + \cdots + 512u^2 + 512 \rangle \\
I_2^u = \langle & -u^3c^2 + 13c^2u^2 + 2u^3c + 5c^2u + 12u^2c + 4u^3 + 4c^2 + 9cu + 24u^2 + 19d - 8c + 18u + 22, \\
& -4u^3c^2 - 2c^2u^2 + 2u^3c + c^3 - 10c^2u + u^2c + 2u^3 - 2c^2 + 5cu + 2u^2 + 3c + 5u + 4,\ b,\ a - 1, \\
& u^4 + u^3 + 3u^2 + 2u + 1 \rangle
\end{aligned}$$

$$\begin{aligned}
I_1^v &= \langle a,\ d + 1,\ c + a,\ b - 1,\ v^2 - v + 1 \rangle \\
I_2^v &= \langle a,\ d,\ c - 1,\ b + 1,\ v^2 + v + 1 \rangle \\
I_3^v &= \langle c,\ d + 1,\ b,\ a - 1,\ v - 1 \rangle \\
I_4^v &= \langle c,\ d + 1,\ -v^2ba + v^2b + av + c - v,\ b^2v^2 - bv + 1 \rangle
\end{aligned}$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 58 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

[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.

$$\boldsymbol{I_1^u = \langle 1.38\times10^{65}u^{40} - 4.47\times10^{65}u^{39} + \cdots + 1.07\times10^{68}d + 6.97\times10^{67},\ 1.14\times10^{66}u^{40} - 3.62\times10^{66}u^{39} + \cdots + 4.26\times10^{68}c + 2.47\times10^{68},\ 7.08\times10^{74}u^{40} - 1.75\times10^{75}u^{39} + \cdots + 1.50\times10^{77}b - 5.67\times10^{77},\ 4.57\times10^{73}u^{40} - 7.89\times10^{75}u^{39} + \cdots + 1.20\times10^{78}a - 7.69\times10^{78},\ u^{41} - 2u^{40} + \cdots + 512u^2 + 512\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0000381150u^{40} + 0.00657423u^{39} + \cdots + 3.10866u + 6.41356 \\ -0.00472210u^{40} + 0.0116861u^{39} + \cdots - 6.53018u + 3.78280 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.00267627u^{40} + 0.00850156u^{39} + \cdots + 2.32863u - 0.578736 \\ -0.00129140u^{40} + 0.00419737u^{39} + \cdots + 1.25599u - 0.653432 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.00393209u^{40} - 0.00559798u^{39} + \cdots + 9.49704u - 0.508301 \\ 0.00344951u^{40} - 0.0105481u^{39} + \cdots + 5.34083u - 6.53585 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.00367234u^{40} - 0.00715345u^{39} + \cdots + 6.07641u - 1.87083 \\ 0.00428778u^{40} - 0.00271115u^{39} + \cdots + 7.55176u + 6.78311 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.00367234u^{40} - 0.00715345u^{39} + \cdots + 6.07641u - 1.87083 \\ 0.00169580u^{40} + 0.00233968u^{39} + \cdots + 5.67152u + 6.68520 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.00488842u^{40} + 0.00771683u^{39} + \cdots - 9.65835u + 0.696220 \\ -0.00492654u^{40} + 0.0142911u^{39} + \cdots - 6.54969u + 7.10978 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.00138487u^{40} + 0.00430419u^{39} + \cdots + 1.07263u + 0.0746961 \\ -0.00129140u^{40} + 0.00419737u^{39} + \cdots + 1.25599u - 0.653432 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.00138487u^{40} + 0.00430419u^{39} + \cdots + 1.07263u + 0.0746961 \\ 0.000383620u^{40} - 0.00160154u^{39} + \cdots - 0.546942u - 0.132211 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.00750642u^{40} + 0.0137245u^{39} + \cdots + 0.520985u - 10.6626$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{41} + 12u^{40} + \cdots + 344u - 16$
c_2, c_5	$u^{41} + 2u^{40} + \cdots + 16u + 4$
c_3	$u^{41} - 2u^{40} + \cdots + 428280u + 66564$
c_4, c_8	$u^{41} - 2u^{40} + \cdots + 512u^2 + 512$
c_6, c_{11}	$u^{41} - 8u^{40} + \cdots - 8u + 16$
c_7, c_9, c_{10}	$u^{41} + 8u^{40} + \cdots - 8u + 16$
c_{12}	$u^{41} + 10u^{40} + \cdots + 2080u + 256$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{41} + 36y^{40} + \cdots + 135968y - 256$
c_2, c_5	$y^{41} + 12y^{40} + \cdots + 344y - 16$
c_3	$y^{41} + 60y^{40} + \cdots + 44022633912y - 4430766096$
c_4, c_8	$y^{41} + 30y^{40} + \cdots - 524288y - 262144$
c_6, c_{11}	$y^{41} - 10y^{40} + \cdots + 2080y - 256$
c_7, c_9, c_{10}	$y^{41} - 50y^{40} + \cdots + 8224y - 256$
c_{12}	$y^{41} + 50y^{40} + \cdots - 663040y - 65536$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.280189 + 0.954581I$ $a = -0.857033 + 0.817841I$ $b = -0.265899 - 0.882324I$ $c = 0.171620 + 0.881343I$ $d = -0.419345 + 0.622257I$	$-1.60252 - 4.55290I$	$-4.51064 + 8.08001I$
$u = 0.280189 - 0.954581I$ $a = -0.857033 - 0.817841I$ $b = -0.265899 + 0.882324I$ $c = 0.171620 - 0.881343I$ $d = -0.419345 - 0.622257I$	$-1.60252 + 4.55290I$	$-4.51064 - 8.08001I$
$u = 0.942111 + 0.024266I$ $a = -0.224229 + 1.244680I$ $b = -0.026109 + 0.791073I$ $c = 1.54076 + 1.79047I$ $d = 0.627424 + 0.518765I$	$0.87865 + 4.07350I$	$-1.48942 - 7.36111I$
$u = 0.942111 - 0.024266I$ $a = -0.224229 - 1.244680I$ $b = -0.026109 - 0.791073I$ $c = 1.54076 - 1.79047I$ $d = 0.627424 - 0.518765I$	$0.87865 - 4.07350I$	$-1.48942 + 7.36111I$
$u = 0.100000 + 0.892301I$ $a = -0.052177 - 0.358577I$ $b = 0.118920 + 0.748261I$ $c = -0.188847 - 0.591938I$ $d = -0.730090 - 0.450883I$	$1.46086 + 1.42227I$	$3.88823 - 3.83998I$
$u = 0.100000 - 0.892301I$ $a = -0.052177 + 0.358577I$ $b = 0.118920 - 0.748261I$ $c = -0.188847 + 0.591938I$ $d = -0.730090 + 0.450883I$	$1.46086 - 1.42227I$	$3.88823 + 3.83998I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.687957 + 0.421229I$ $a = 0.333750 + 0.336915I$ $b = 1.03088 + 1.01360I$ $c = -0.709049 - 0.230219I$ $d = -1.167000 - 0.190055I$	$2.43397 + 0.55461I$	$3.61478 + 1.21885I$
$u = 0.687957 - 0.421229I$ $a = 0.333750 - 0.336915I$ $b = 1.03088 - 1.01360I$ $c = -0.709049 + 0.230219I$ $d = -1.167000 + 0.190055I$	$2.43397 - 0.55461I$	$3.61478 - 1.21885I$
$u = 0.586118 + 0.499909I$ $a = -0.491451 + 0.661896I$ $b = -0.737846 + 0.812570I$ $c = 0.896958 + 0.907467I$ $d = 0.055470 + 0.479911I$	$-3.14860 + 0.97270I$	$-10.27133 - 0.16493I$
$u = 0.586118 - 0.499909I$ $a = -0.491451 - 0.661896I$ $b = -0.737846 - 0.812570I$ $c = 0.896958 - 0.907467I$ $d = 0.055470 - 0.479911I$	$-3.14860 - 0.97270I$	$-10.27133 + 0.16493I$
$u = -0.757570 + 0.057431I$ $a = 0.31675 + 1.45050I$ $b = 0.104479 + 0.545464I$ $c = 2.25474 + 1.86460I$ $d = 0.677009 + 0.316853I$	$0.834104 - 1.057860I$	$-1.84303 - 1.72199I$
$u = -0.757570 - 0.057431I$ $a = 0.31675 - 1.45050I$ $b = 0.104479 - 0.545464I$ $c = 2.25474 - 1.86460I$ $d = 0.677009 - 0.316853I$	$0.834104 + 1.057860I$	$-1.84303 + 1.72199I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.748122 + 0.099272I$ $a = 0.93330 + 1.08938I$ $b = 2.35626 + 2.25935I$ $c = -0.756009 + 0.052947I$ $d = -1.208600 + 0.043942I$	$0.52179 - 2.81355I$	$-3.88749 + 5.15717I$
$u = -0.748122 - 0.099272I$ $a = 0.93330 - 1.08938I$ $b = 2.35626 - 2.25935I$ $c = -0.756009 - 0.052947I$ $d = -1.208600 - 0.043942I$	$0.52179 + 2.81355I$	$-3.88749 - 5.15717I$
$u = 0.004283 + 0.652626I$ $a = -1.55282 + 0.50485I$ $b = -2.68614 + 0.95227I$ $c = 0.055598 + 0.216120I$ $d = -0.573765 + 0.154381I$	$-0.70242 - 2.36927I$	$0.82941 + 4.59716I$
$u = 0.004283 - 0.652626I$ $a = -1.55282 - 0.50485I$ $b = -2.68614 - 0.95227I$ $c = 0.055598 - 0.216120I$ $d = -0.573765 - 0.154381I$	$-0.70242 + 2.36927I$	$0.82941 - 4.59716I$
$u = 0.076846 + 0.625583I$ $a = 1.20268 + 1.29382I$ $b = -0.275587 - 0.299772I$ $c = 0.281414 + 0.275761I$ $d = -0.413943 + 0.184853I$	$-0.85500 + 1.57570I$	$-0.179374 + 0.776646I$
$u = 0.076846 - 0.625583I$ $a = 1.20268 - 1.29382I$ $b = -0.275587 + 0.299772I$ $c = 0.281414 - 0.275761I$ $d = -0.413943 - 0.184853I$	$-0.85500 - 1.57570I$	$-0.179374 - 0.776646I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.01326 + 1.47518I$ $a = -0.655430 + 0.903143I$ $b = 0.71376 - 1.96932I$ $c = -0.266359 - 0.027087I$ $d = 1.55037 - 0.00630I$	$5.83509 - 1.34899I$	$0.977007 + 0.716014I$
$u = 0.01326 - 1.47518I$ $a = -0.655430 - 0.903143I$ $b = 0.71376 + 1.96932I$ $c = -0.266359 + 0.027087I$ $d = 1.55037 + 0.00630I$	$5.83509 + 1.34899I$	$0.977007 - 0.716014I$
$u = -0.45410 + 1.44756I$ $a = 0.692132 + 0.807395I$ $b = 0.54174 - 2.28917I$ $c = -0.057340 + 0.859520I$ $d = 1.53907 + 0.21697I$	$4.95290 + 7.65933I$	$-2.00000 - 5.62562I$
$u = -0.45410 - 1.44756I$ $a = 0.692132 - 0.807395I$ $b = 0.54174 + 2.28917I$ $c = -0.057340 - 0.859520I$ $d = 1.53907 - 0.21697I$	$4.95290 - 7.65933I$	$-2.00000 + 5.62562I$
$u = -0.466919$ $a = -0.0931478$ $b = -0.579529$ $c = 1.52928$ $d = 0.230214$	-1.25610	-8.53770
$u = -0.35061 + 1.53639I$ $a = -0.902103 + 0.091854I$ $b = -0.136075 + 1.212460I$ $c = -0.137964 - 1.319330I$ $d = -0.581850 - 1.030240I$	$6.34261 + 3.42138I$	0

<table>
<tr><th>Solutions to I_1^u</th><th>$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$</th><th>Cusp shape</th></tr>
<tr><td>$u = -0.35061 - 1.53639I$
$a = -0.902103 - 0.091854I$
$b = -0.136075 - 1.212460I$
$c = -0.137964 + 1.319330I$
$d = -0.581850 + 1.030240I$</td><td>$6.34261 - 3.42138I$</td><td>$0$</td></tr>
<tr><td>$u = 0.51610 + 1.49655I$
$a = -1.048210 - 0.118410I$
$b = -0.199107 - 1.232920I$
$c = -0.027761 + 1.384130I$
$d = -0.474223 + 1.062390I$</td><td>$5.66064 - 9.73522I$</td><td>$0. + 7.05049I$</td></tr>
<tr><td>$u = 0.51610 - 1.49655I$
$a = -1.048210 + 0.118410I$
$b = -0.199107 + 1.232920I$
$c = -0.027761 - 1.384130I$
$d = -0.474223 - 1.062390I$</td><td>$5.66064 + 9.73522I$</td><td>$0. - 7.05049I$</td></tr>
<tr><td>$u = 1.62020 + 0.13077I$
$a = -0.040113 - 0.941340I$
$b = 0.59368 - 2.03806I$
$c = -1.237690 - 0.070746I$
$d = -1.61926 - 0.06175I$</td><td>$8.89854 + 0.19005I$</td><td>0</td></tr>
<tr><td>$u = 1.62020 - 0.13077I$
$a = -0.040113 + 0.941340I$
$b = 0.59368 + 2.03806I$
$c = -1.237690 + 0.070746I$
$d = -1.61926 + 0.06175I$</td><td>$8.89854 - 0.19005I$</td><td>0</td></tr>
<tr><td>$u = -1.59450 + 0.33027I$
$a = -0.066671 + 1.013570I$
$b = 0.54013 + 2.15152I$
$c = -1.226210 + 0.179294I$
$d = -1.60824 + 0.15639I$</td><td>$8.54414 - 6.61454I$</td><td>0</td></tr>
</table>

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.59450 - 0.33027I$ $a = -0.066671 - 1.013570I$ $b = 0.54013 - 2.15152I$ $c = -1.226210 - 0.179294I$ $d = -1.60824 - 0.15639I$	$8.54414 + 6.61454I$	0
$u = 0.23388 + 1.65276I$ $a = -0.028955 - 0.573985I$ $b = 0.54769 + 2.08324I$ $c = 0.106730 - 0.375749I$ $d = 1.63512 - 0.11031I$	$9.70458 - 3.47853I$	0
$u = 0.23388 - 1.65276I$ $a = -0.028955 + 0.573985I$ $b = 0.54769 - 2.08324I$ $c = 0.106730 + 0.375749I$ $d = 1.63512 + 0.11031I$	$9.70458 + 3.47853I$	0
$u = -0.86658 + 1.51028I$ $a = 1.022730 - 0.213320I$ $b = 0.25996 - 2.32316I$ $c = 0.437465 + 1.236920I$ $d = 1.57759 + 0.41592I$	$12.2320 + 15.1490I$	0
$u = -0.86658 - 1.51028I$ $a = 1.022730 + 0.213320I$ $b = 0.25996 + 2.32316I$ $c = 0.437465 - 1.236920I$ $d = 1.57759 - 0.41592I$	$12.2320 - 15.1490I$	0
$u = 0.78943 + 1.61251I$ $a = 0.798911 + 0.089727I$ $b = 0.30028 + 2.26529I$ $c = 0.449091 - 1.082320I$ $d = 1.62479 - 0.37558I$	$13.5026 - 8.6555I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.78943 - 1.61251I$ $a = 0.798911 - 0.089727I$ $b = 0.30028 - 2.26529I$ $c = 0.449091 + 1.082320I$ $d = 1.62479 + 0.37558I$	$13.5026 + 8.6555I$	0
$u = 0.64330 + 1.72758I$ $a = -0.985622 - 0.148269I$ $b = 0.50633 - 1.68069I$ $c = 0.444320 - 0.855033I$ $d = 1.67606 - 0.30300I$	$14.7932 - 7.9945I$	0
$u = 0.64330 - 1.72758I$ $a = -0.985622 + 0.148269I$ $b = 0.50633 + 1.68069I$ $c = 0.444320 + 0.855033I$ $d = 1.67606 + 0.30300I$	$14.7932 + 7.9945I$	0
$u = -0.48873 + 1.82349I$ $a = -0.848856 + 0.042762I$ $b = 0.50243 + 1.74679I$ $c = 0.453903 + 0.630306I$ $d = 1.71830 + 0.22835I$	$15.6167 + 1.2657I$	0
$u = -0.48873 - 1.82349I$ $a = -0.848856 - 0.042762I$ $b = 0.50243 - 1.74679I$ $c = 0.453903 - 0.630306I$ $d = 1.71830 - 0.22835I$	$15.6167 - 1.2657I$	0

II. $\boldsymbol{I_2^u = \langle -u^3c^2 + 2u^3c + \cdots - 8c + 22,\ -4u^3c^2 + 2u^3c + \cdots + 3c + 4,\ b,\ a - 1,\ u^4 + u^3 + 3u^2 + 2u + 1 \rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} c \\ 0.0526316c^2u^3 - 0.105263cu^3 + \cdots + 0.421053c - 1.15789 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0526316c^2u^3 + 0.105263cu^3 + \cdots + 0.578947c + 1.15789 \\ 0.0526316c^2u^3 - 0.105263cu^3 + \cdots + 0.421053c - 1.15789 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^3 + 2u \\ u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^3 + 2u \\ u^3 + u^2 + 2u + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^2 - 1 \\ -u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.0526316c^2u^3 + 0.105263cu^3 + \cdots + 0.578947c + 1.15789 \\ 0.0526316c^2u^3 - 0.105263cu^3 + \cdots + 0.421053c - 1.15789 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0526316c^2u^3 + 0.105263cu^3 + \cdots + 0.578947c + 1.15789 \\ -0.368421c^2u^3 - 0.263158cu^3 + \cdots - 0.947368c + 0.105263 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^3 - 4u^2 - 12u - 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_8	$(y^4 + 5y^3 + 7y^2 + 2y + 1)^3$
c_2, c_5	$(y^4 + y^3 + 3y^2 + 2y + 1)^3$
c_3	$(y^4 + 9y^3 + 31y^2 + 19y + 4)^3$
c_6, c_7, c_9 c_{10}, c_{11}	$y^{12} - 8y^{11} + \cdots + 10y + 1$
c_{12}	$y^{12} - 8y^{11} + \cdots - 78y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = 1.00000$ $b = 0$ $c = 0.765020 - 0.640647I$ $d = -0.072869 - 0.359716I$	$-0.21101 + 1.41510I$	$-1.82674 - 4.90874I$
$u = -0.395123 + 0.506844I$ $a = 1.00000$ $b = 0$ $c = -0.516348 + 0.247391I$ $d = -1.009230 + 0.198659I$	$-0.21101 + 1.41510I$	$-1.82674 - 4.90874I$
$u = -0.395123 + 0.506844I$ $a = 1.00000$ $b = 0$ $c = -1.43015 + 5.08937I$ $d = 1.082100 + 0.161058I$	$-0.21101 + 1.41510I$	$-1.82674 - 4.90874I$
$u = -0.395123 - 0.506844I$ $a = 1.00000$ $b = 0$ $c = 0.765020 + 0.640647I$ $d = -0.072869 + 0.359716I$	$-0.21101 - 1.41510I$	$-1.82674 + 4.90874I$
$u = -0.395123 - 0.506844I$ $a = 1.00000$ $b = 0$ $c = -0.516348 - 0.247391I$ $d = -1.009230 - 0.198659I$	$-0.21101 - 1.41510I$	$-1.82674 + 4.90874I$
$u = -0.395123 - 0.506844I$ $a = 1.00000$ $b = 0$ $c = -1.43015 - 5.08937I$ $d = 1.082100 - 0.161058I$	$-0.21101 - 1.41510I$	$-1.82674 + 4.90874I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.10488 + 1.55249I$ $a = 1.00000$ $b = 0$ $c = -0.423593 + 1.133540I$ $d = -0.856215 + 0.919282I$	$6.79074 + 3.16396I$	$1.82674 - 2.56480I$
$u = -0.10488 + 1.55249I$ $a = 1.00000$ $b = 0$ $c = -0.291061 - 1.215200I$ $d = -0.730940 - 0.968963I$	$6.79074 + 3.16396I$	$1.82674 - 2.56480I$
$u = -0.10488 + 1.55249I$ $a = 1.00000$ $b = 0$ $c = -0.103867 + 0.192761I$ $d = 1.58715 + 0.04968I$	$6.79074 + 3.16396I$	$1.82674 - 2.56480I$
$u = -0.10488 - 1.55249I$ $a = 1.00000$ $b = 0$ $c = -0.423593 - 1.133540I$ $d = -0.856215 - 0.919282I$	$6.79074 - 3.16396I$	$1.82674 + 2.56480I$
$u = -0.10488 - 1.55249I$ $a = 1.00000$ $b = 0$ $c = -0.291061 + 1.215200I$ $d = -0.730940 + 0.968963I$	$6.79074 - 3.16396I$	$1.82674 + 2.56480I$
$u = -0.10488 - 1.55249I$ $a = 1.00000$ $b = 0$ $c = -0.103867 - 0.192761I$ $d = 1.58715 - 0.04968I$	$6.79074 - 3.16396I$	$1.82674 + 2.56480I$

III. $I_1^v = \langle a,\ d+1,\ c+a,\ b-1,\ v^2-v+1 \rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} v \\ -v \end{pmatrix}$$

$$a_2 = \begin{pmatrix} v-1 \\ -v \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v+1$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$y^2 + y + 1$
c_4, c_6, c_8 c_{11}, c_{12}	y^2
c_7, c_9, c_{10}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.500000 + 0.866025I$ $a = 0$ $b = 1.00000$ $c = 0$ $d = -1.00000$	$1.64493 - 2.02988I$	$3.00000 + 3.46410I$
$v = 0.500000 - 0.866025I$ $a = 0$ $b = 1.00000$ $c = 0$ $d = -1.00000$	$1.64493 + 2.02988I$	$3.00000 - 3.46410I$

IV. $I_2^v = \langle a,\ d,\ c-1,\ b+1,\ v^2+v+1 \rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} v \\ -v \end{pmatrix}$$
$$a_2 = \begin{pmatrix} v+1 \\ -v \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4v - 11$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$y^2 + y + 1$
c_4, c_7, c_8 c_9, c_{10}	y^2
c_6, c_{11}, c_{12}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v=-0.500000+0.866025I$ $a=0$ $b=-1.00000$ $c=1.00000$ $d=0$	$-1.64493+2.02988I$	$-9.00000-3.46410I$
$v=-0.500000-0.866025I$ $a=0$ $b=-1.00000$ $c=1.00000$ $d=0$	$-1.64493-2.02988I$	$-9.00000+3.46410I$

V. $I_3^v = \langle c,\ d+1,\ b,\ a-1,\ v-1 \rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_8	u
c_6, c_7, c_{12}	$u+1$
c_9, c_{10}, c_{11}	$u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_8	y
c_6, c_7, c_9 c_{10}, c_{11}, c_{12}	$y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v =$ 1.00000		
$a =$ 1.00000		
$b =$ 0	0	0
$c =$ 0		
$d = -1.00000$		

VI. $I^v_4 = \langle c,\ d+1,\ -v^2ba + v^2b + av + c - v,\ b^2v^2 - bv + 1\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ b \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ b-1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -bv + v \\ -b^2v \end{pmatrix}$$
$$a_2 = \begin{pmatrix} v^2b - bv \\ -b^2v \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ -b \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -b^3v + 4bv + v^2 - 4$

(iv) u-Polynomials at the component : It cannot be defined for a positive dimension component.

(v) Riley Polynomials at the component : It cannot be defined for a positive dimension component.

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^v	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$v = \cdots$		
$a = \cdots$		
$b = \cdots$	$-\ 2.02988I$	$-3.94751 + 3.47096I$
$c = \cdots$		
$d = \cdots$		

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u^2-u+1)^2(u^4+u^3+3u^2+2u+1)^3$ $\cdot\,(u^{41}+12u^{40}+\cdots+344u-16)$
c_2	$u(u^2+u+1)^2(u^4+u^3+u^2+1)^3(u^{41}+2u^{40}+\cdots+16u+4)$
c_3	$u(u^2-u+1)^2(u^4-u^3+5u^2+u+2)^3$ $\cdot\,(u^{41}-2u^{40}+\cdots+428280u+66564)$
c_4, c_8	$u^5(u^4+u^3+3u^2+2u+1)^3(u^{41}-2u^{40}+\cdots+512u^2+512)$
c_5	$u(u^2-u+1)^2(u^4+u^3+u^2+1)^3(u^{41}+2u^{40}+\cdots+16u+4)$
c_6	$u^2(u-1)^2(u+1)(u^{12}-4u^{10}+\cdots-2u+1)(u^{41}-8u^{40}+\cdots-8u+16)$
c_7	$u^2(u+1)^3(u^{12}-4u^{10}+\cdots-2u+1)(u^{41}+8u^{40}+\cdots-8u+16)$
c_9, c_{10}	$u^2(u-1)^3(u^{12}-4u^{10}+\cdots-2u+1)(u^{41}+8u^{40}+\cdots-8u+16)$
c_{11}	$u^2(u-1)(u+1)^2(u^{12}-4u^{10}+\cdots-2u+1)(u^{41}-8u^{40}+\cdots-8u+16)$
c_{12}	$u^2(u+1)^3(u^{12}+8u^{11}+\cdots-10u+1)$ $\cdot\,(u^{41}+10u^{40}+\cdots+2080u+256)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y^2+y+1)^2(y^4+5y^3+7y^2+2y+1)^3$ $\cdot\,(y^{41}+36y^{40}+\cdots+135968y-256)$
c_2, c_5	$y(y^2+y+1)^2(y^4+y^3+3y^2+2y+1)^3$ $\cdot\,(y^{41}+12y^{40}+\cdots+344y-16)$
c_3	$y(y^2+y+1)^2(y^4+9y^3+31y^2+19y+4)^3$ $\cdot\,(y^{41}+60y^{40}+\cdots+44022633912y-4430766096)$
c_4, c_8	$y^5(y^4+5y^3+\cdots+2y+1)^3(y^{41}+30y^{40}+\cdots-524288y-262144)$
c_6, c_{11}	$y^2(y-1)^3(y^{12}-8y^{11}+\cdots+10y+1)$ $\cdot\,(y^{41}-10y^{40}+\cdots+2080y-256)$
c_7, c_9, c_{10}	$y^2(y-1)^3(y^{12}-8y^{11}+\cdots+10y+1)$ $\cdot\,(y^{41}-50y^{40}+\cdots+8224y-256)$
c_{12}	$y^2(y-1)^3(y^{12}-8y^{11}+\cdots-78y+1)$ $\cdot\,(y^{41}+50y^{40}+\cdots-663040y-65536)$