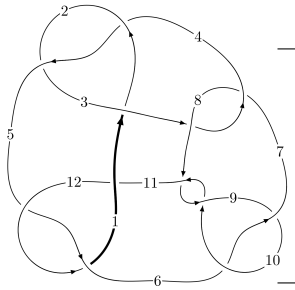
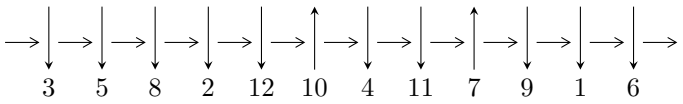
$12a_{0117}$ $(K12a_{0117})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$\underset{c_3}{3,8} \to \underset{c_8}{4,11} \to \underset{c_2}{5,9} \to \underset{c_1}{2} \to \underset{c_{11}}{1} \to \underset{c_7}{12} \to \underset{c_{10}}{7} \to \underset{c_6}{10} \to 6 \longrightarrow\!\!\!\!\gg c_4, c_5, c_9, c_{12}$$

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

$$\begin{aligned}
I_1^u = \langle & 3.99437 \times 10^{56} u^{42} - 1.17694 \times 10^{57} u^{41} + \cdots + 1.61592 \times 10^{58} d + 3.40126 \times 10^{57}, \\
& 3.31530 \times 10^{55} u^{42} - 3.28100 \times 10^{56} u^{41} + \cdots + 3.23183 \times 10^{58} c + 4.23971 \times 10^{58}, \\
& - 4.23475 \times 10^{55} u^{42} + 5.01357 \times 10^{55} u^{41} + \cdots + 1.61592 \times 10^{58} b - 1.64157 \times 10^{57}, \\
& 1.77513 \times 10^{55} u^{42} - 8.50273 \times 10^{55} u^{41} + \cdots + 3.23183 \times 10^{58} a - 3.36911 \times 10^{58},\ u^{43} - 3u^{42} + \cdots + 64u - \\
I_2^u = \langle & 5.02544 \times 10^{17} u^{34} - 6.24095 \times 10^{17} u^{33} + \cdots + 3.02602 \times 10^{18} d + 2.19741 \times 10^{18}, \\
& - 6.42534 \times 10^{19} u^{34} - 3.74850 \times 10^{19} u^{33} + \cdots + 4.84163 \times 10^{19} c + 2.56918 \times 10^{19}, \\
& 4.96996 \times 10^{18} a u^{34} - 6.75491 \times 10^{18} u^{34} + \cdots - 1.88128 \times 10^{19} a - 4.81090 \times 10^{19}, \\
& - 5.09108 \times 10^{19} a u^{34} - 2.42015 \times 10^{19} u^{34} + \cdots - 1.99866 \times 10^{19} a - 6.67500 \times 10^{19},\ u^{35} + u^{34} + \cdots - 8u -
\end{aligned}$$

$$\begin{aligned}
I_1^v &= \langle c,\ d+1,\ b,\ a-1,\ v^2+v+1 \rangle \\
I_2^v &= \langle a,\ d+1,\ c+a,\ b-1,\ v^2+v+1 \rangle \\
I_3^v &= \langle a,\ d,\ c+1,\ b-1,\ v+1 \rangle \\
I_4^v &= \langle a,\ d^2v^2 - dv + 1,\ v^2dc - v^2d - cv + a + v,\ da - c + 1,\ c^2v^2 - cav - 2v^2c + a^2 + av + v^2,\ b - 1 \rangle
\end{aligned}$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 118 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.

$$\boldsymbol{I_1^u = \langle 3.99\times 10^{56}u^{42} - 1.18\times 10^{57}u^{41} + \cdots + 1.62\times 10^{58}d + 3.40\times 10^{57},\ 3.32\times 10^{55}u^{42} - 3.28\times 10^{56}u^{41} + \cdots + 3.23\times 10^{58}c + 4.24\times 10^{58},\ -4.23\times 10^{55}u^{42} + 5.01\times 10^{55}u^{41} + \cdots + 1.62\times 10^{58}b - 1.64\times 10^{57},\ 1.78\times 10^{55}u^{42} - 8.50\times 10^{55}u^{41} + \cdots + 3.23\times 10^{58}a - 3.37\times 10^{58},\ u^{43} - 3u^{42} + \cdots + 64u - 32\rangle}$$

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.00102583u^{42} + 0.0101521u^{41} + \cdots - 0.345721u - 1.31186 \\ -0.0247189u^{42} + 0.0728342u^{41} + \cdots - 0.100365u - 0.210485 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.000549265u^{42} + 0.00263093u^{41} + \cdots + 0.260997u + 1.04248 \\ 0.00262065u^{42} - 0.00310262u^{41} + \cdots - 0.582583u + 0.101587 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.0176645u^{42} - 0.0450742u^{41} + \cdots - 2.28416u - 0.505300 \\ -0.0151840u^{42} + 0.0606156u^{41} + \cdots + 2.05478u - 1.00258 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.000549265u^{42} + 0.00263093u^{41} + \cdots + 0.260997u + 1.04248 \\ -0.00664203u^{42} + 0.00629753u^{41} + \cdots + 0.502086u - 0.0701269 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.00719130u^{42} + 0.00892846u^{41} + \cdots + 0.763083u + 0.972348 \\ -0.00664203u^{42} + 0.00629753u^{41} + \cdots + 0.502086u - 0.0701269 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.00209131u^{42} + 0.0152778u^{41} + \cdots - 0.305485u - 1.53809 \\ -0.0237130u^{42} + 0.0774882u^{41} + \cdots - 0.381714u - 0.292656 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.0268260u^{42} - 0.0643618u^{41} + \cdots - 3.05990u - 0.696376 \\ 0.000919890u^{42} + 0.0297984u^{41} + \cdots + 1.04761u - 0.931356 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0236931u^{42} + 0.0626821u^{41} + \cdots + 0.245356u + 1.10137 \\ -0.0252351u^{42} + 0.0753290u^{41} + \cdots - 0.321126u - 0.479194 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.141642u^{42} + 0.373966u^{41} + \cdots + 18.4912u - 10.3634$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{43} + 19u^{42} + \cdots + 11u + 1$
c_2, c_4, c_5 c_{12}	$u^{43} - 5u^{42} + \cdots - 5u + 1$
c_3, c_7	$u^{43} + 3u^{42} + \cdots + 64u + 32$
c_6, c_9	$u^{43} + u^{42} + \cdots + 8u + 4$
c_8, c_{10}	$u^{43} + 15u^{42} + \cdots + 88u - 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{43} + 21y^{42} + \cdots - 117y - 1$
c_2, c_4, c_5 c_{12}	$y^{43} - 19y^{42} + \cdots + 11y - 1$
c_3, c_7	$y^{43} + 15y^{42} + \cdots - 1024y - 1024$
c_6, c_9	$y^{43} + 15y^{42} + \cdots + 88y - 16$
c_8, c_{10}	$y^{43} + 27y^{42} + \cdots + 18208y - 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.083173+0.999400I$ $a=\ \ 0.72843-1.47481I$ $b=-0.730777+0.545079I$ $c=\ \ 0.847687+0.941729I$ $d=-0.167389-0.931774I$	$-0.05445+4.88438I$	$-6.23953-8.26907I$
$u=-0.083173-0.999400I$ $a=\ \ 0.72843+1.47481I$ $b=-0.730777-0.545079I$ $c=\ \ 0.847687-0.941729I$ $d=-0.167389+0.931774I$	$-0.05445-4.88438I$	$-6.23953+8.26907I$
$u=-0.853926+0.430623I$ $a=\ \ 0.481539-0.101502I$ $b=\ \ 0.988333+0.419116I$ $c=-0.433251+0.229265I$ $d=-1.40759+0.95521I$	$-2.38574-3.27178I$	$-9.17419+4.94523I$
$u=-0.853926-0.430623I$ $a=\ \ 0.481539+0.101502I$ $b=\ \ 0.988333-0.419116I$ $c=-0.433251-0.229265I$ $d=-1.40759-0.95521I$	$-2.38574+3.27178I$	$-9.17419-4.94523I$
$u=\ \ 1.033880+0.177916I$ $a=\ \ 0.555689-0.233546I$ $b=\ \ 0.529415+0.642786I$ $c=-0.074981+1.239350I$ $d=-0.257235+0.960210I$	$2.18783+1.46576I$	$-4.39540+0.53246I$
$u=\ \ 1.033880-0.177916I$ $a=\ \ 0.555689+0.233546I$ $b=\ \ 0.529415-0.642786I$ $c=-0.074981-1.239350I$ $d=-0.257235-0.960210I$	$2.18783-1.46576I$	$-4.39540-0.53246I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.073470+0.049653I$ $a=\ \ 0.530276+0.204737I$ $b=\ \ 0.641163-0.633645I$ $c=\ \ 0.195783-1.125570I$ $d=-0.132889-0.974636I$	$2.38615+4.03105I$	$-4.49490-6.55598I$
$u=-1.073470-0.049653I$ $a=\ \ 0.530276-0.204737I$ $b=\ \ 0.641163+0.633645I$ $c=\ \ 0.195783+1.125570I$ $d=-0.132889+0.974636I$	$2.38615-4.03105I$	$-4.49490+6.55598I$
$u=-0.118650+1.091750I$ $a=\ \ 0.665477+1.093120I$ $b=-0.593668-0.667444I$ $c=\ \ 0.042888-0.446984I$ $d=-0.181308+1.017000I$	$3.02575-1.21250I$	$-0.81942+2.86814I$
$u=-0.118650-1.091750I$ $a=\ \ 0.665477-1.093120I$ $b=-0.593668+0.667444I$ $c=\ \ 0.042888+0.446984I$ $d=-0.181308-1.017000I$	$3.02575+1.21250I$	$-0.81942-2.86814I$
$u=\ \ 0.359241+0.820253I$ $a=\ \ 0.870329-0.688965I$ $b=-0.293648+0.559159I$ $c=-0.888721+0.717011I$ $d=-0.421777-0.556156I$	$-0.40821-1.76300I$	$-5.68682+2.17312I$
$u=\ \ 0.359241-0.820253I$ $a=\ \ 0.870329+0.688965I$ $b=-0.293648-0.559159I$ $c=-0.888721-0.717011I$ $d=-0.421777+0.556156I$	$-0.40821+1.76300I$	$-5.68682-2.17312I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.910628 + 0.648287I$ $a = 0.449928 + 0.096871I$ $b = 1.124110 - 0.457326I$ $c = -0.725195 + 0.750875I$ $d = -2.15758 + 0.22862I$	$-6.78885 + 5.21532I$	$-15.4874 - 4.9651I$
$u = 0.910628 - 0.648287I$ $a = 0.449928 - 0.096871I$ $b = 1.124110 + 0.457326I$ $c = -0.725195 - 0.750875I$ $d = -2.15758 - 0.22862I$	$-6.78885 - 5.21532I$	$-15.4874 + 4.9651I$
$u = 0.653698 + 0.530431I$ $a = 0.474331 + 0.068978I$ $b = 1.064570 - 0.300236I$ $c = -1.46607 - 0.52025I$ $d = -2.88991 - 1.78080I$	$-4.07070 - 1.09789I$	$-13.44053 + 1.40134I$
$u = 0.653698 - 0.530431I$ $a = 0.474331 - 0.068978I$ $b = 1.064570 + 0.300236I$ $c = -1.46607 + 0.52025I$ $d = -2.88991 + 1.78080I$	$-4.07070 + 1.09789I$	$-13.44053 - 1.40134I$
$u = 0.576447 + 1.031310I$ $a = -0.28667 + 1.83591I$ $b = -1.083030 - 0.531725I$ $c = 0.534742 + 1.166610I$ $d = -1.301930 - 0.329738I$	$-2.58520 - 3.71825I$	$-9.87585 + 4.37570I$
$u = 0.576447 - 1.031310I$ $a = -0.28667 - 1.83591I$ $b = -1.083030 + 0.531725I$ $c = 0.534742 - 1.166610I$ $d = -1.301930 + 0.329738I$	$-2.58520 + 3.71825I$	$-9.87585 - 4.37570I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.098260+0.588414I$ $a=\ \ 0.444497-0.121481I$ $b=\ \ 1.093370+0.572119I$ $c=\ \ 0.249890-0.823067I$ $d=-1.021840-0.591171I$	$-0.56681-5.57701I$	$-7.91552+3.90122I$
$u=-1.098260-0.588414I$ $a=\ \ 0.444497+0.121481I$ $b=\ \ 1.093370-0.572119I$ $c=\ \ 0.249890+0.823067I$ $d=-1.021840+0.591171I$	$-0.56681+5.57701I$	$-7.91552-3.90122I$
$u=-0.614898+1.118930I$ $a=-0.31373-1.65536I$ $b=-1.110520+0.583151I$ $c=\ \ 0.160557-0.564023I$ $d=-0.993758+0.779989I$	$-0.28043+8.69625I$	$-6.61034-7.94559I$
$u=-0.614898-1.118930I$ $a=-0.31373+1.65536I$ $b=-1.110520-0.583151I$ $c=\ \ 0.160557+0.564023I$ $d=-0.993758-0.779989I$	$-0.28043-8.69625I$	$-6.61034+7.94559I$
$u=\ \ 1.109210+0.657844I$ $a=\ \ 0.436604+0.117557I$ $b=\ \ 1.135580-0.575012I$ $c=\ \ 0.205444+1.179480I$ $d=-1.16587+0.97462I$	$-1.67059+11.25340I$	$-9.77881-8.46956I$
$u=\ \ 1.109210-0.657844I$ $a=\ \ 0.436604-0.117557I$ $b=\ \ 1.135580+0.575012I$ $c=\ \ 0.205444-1.179480I$ $d=-1.16587-0.97462I$	$-1.67059-11.25340I$	$-9.77881+8.46956I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.724262 + 1.081360I$ $a = -0.51124 + 1.64089I$ $b = -1.173080 - 0.555502I$ $c = -0.733855 + 0.745817I$ $d = -1.52033 - 1.25212I$	$-5.40682 - 11.27400I$	$-13.1483 + 8.7166I$
$u = \ 0.724262 - 1.081360I$ $a = -0.51124 - 1.64089I$ $b = -1.173080 + 0.555502I$ $c = -0.733855 - 0.745817I$ $d = -1.52033 + 1.25212I$	$-5.40682 + 11.27400I$	$-13.1483 - 8.7166I$
$u = -0.460216 + 1.229810I$ $a = \ 0.522317 + 0.781774I$ $b = -0.409134 - 0.884374I$ $c = -0.886956 + 0.201557I$ $d = -0.82278 + 1.35195I$	$6.33622 + 1.07199I$	$-1.20689 + 1.13710I$
$u = -0.460216 - 1.229810I$ $a = \ 0.522317 - 0.781774I$ $b = -0.409134 + 0.884374I$ $c = -0.886956 - 0.201557I$ $d = -0.82278 - 1.35195I$	$6.33622 - 1.07199I$	$-1.20689 - 1.13710I$
$u = \ 0.548223 + 1.211710I$ $a = \ 0.521334 - 0.726495I$ $b = -0.347993 + 0.908591I$ $c = -1.151280 - 0.142674I$ $d = -1.06491 - 1.27360I$	$5.47474 - 6.91618I$	$-2.74163 + 4.17963I$
$u = \ 0.548223 - 1.211710I$ $a = \ 0.521334 + 0.726495I$ $b = -0.347993 - 0.908591I$ $c = -1.151280 + 0.142674I$ $d = -1.06491 + 1.27360I$	$5.47474 + 6.91618I$	$-2.74163 - 4.17963I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.168268 + 1.366960I$		
$a = 0.219555 + 1.223470I$		
$b = -0.857901 - 0.791847I$	$7.94604 - 2.88039I$	$-2.40290 + 2.87135I$
$c = 0.981919 + 0.112942I$		
$d = 0.509117 + 0.733224I$		
$u = 0.168268 - 1.366960I$		
$a = 0.219555 - 1.223470I$		
$b = -0.857901 + 0.791847I$	$7.94604 + 2.88039I$	$-2.40290 - 2.87135I$
$c = 0.981919 - 0.112942I$		
$d = 0.509117 - 0.733224I$		
$u = 0.620383$		
$a = 0.635515$		
$b = 0.573528$	-1.07886	-8.06050
$c = 0.187133$		
$d = 0.872137$		
$u = -0.256404 + 1.367180I$		
$a = 0.141032 - 1.272300I$		
$b = -0.913934 + 0.776435I$	$7.59831 + 8.92002I$	$-3.37196 - 8.11870I$
$c = 1.080980 - 0.022426I$		
$d = 0.549850 - 0.430577I$		
$u = -0.256404 - 1.367180I$		
$a = 0.141032 + 1.272300I$		
$b = -0.913934 - 0.776435I$	$7.59831 - 8.92002I$	$-3.37196 + 8.11870I$
$c = 1.080980 + 0.022426I$		
$d = 0.549850 + 0.430577I$		
$u = 0.170237 + 0.574659I$		
$a = 1.248050 - 0.407611I$		
$b = -0.275978 + 0.236465I$	$-0.37797 - 1.66748I$	$-2.59196 + 2.78569I$
$c = -1.39991 + 0.71798I$		
$d = 0.022364 - 0.261910I$		

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.170237 - 0.574659I$ $a = 1.248050 + 0.407611I$ $b = -0.275978 - 0.236465I$ $c = -1.39991 - 0.71798I$ $d = 0.022364 + 0.261910I$	$-0.37797 + 1.66748I$	$-2.59196 - 2.78569I$
$u = -0.766704 + 1.185140I$ $a = -0.48729 - 1.47075I$ $b = -1.202990 + 0.612671I$ $c = -0.773518 + 0.191669I$ $d = -1.04186 + 1.80633I$	$1.37987 + 12.30340I$	$-8.00000 - 6.92563I$
$u = -0.766704 - 1.185140I$ $a = -0.48729 + 1.47075I$ $b = -1.202990 - 0.612671I$ $c = -0.773518 - 0.191669I$ $d = -1.04186 - 1.80633I$	$1.37987 - 12.30340I$	$-8.00000 + 6.92563I$
$u = 0.80758 + 1.17123I$ $a = -0.54459 + 1.45657I$ $b = -1.225210 - 0.602344I$ $c = -1.124940 - 0.247998I$ $d = -1.24308 - 2.01707I$	$0.0200 - 18.1731I$	$-8.00000 + 11.31467I$
$u = 0.80758 - 1.17123I$ $a = -0.54459 - 1.45657I$ $b = -1.225210 + 0.602344I$ $c = -1.124940 + 0.247998I$ $d = -1.24308 + 2.01707I$	$0.0200 + 18.1731I$	$-8.00000 - 11.31467I$
$u = -0.546169 + 0.144967I$ $a = 0.536373 - 0.039062I$ $b = 0.854540 + 0.135059I$ $c = 0.76523 + 1.50364I$ $d = 1.77463 + 3.06017I$	$-2.99504 - 2.52590I$	$-15.3721 + 4.9240I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.546169 - 0.144967I$		
$a = \ \ 0.536373 + 0.039062I$		
$b = \ \ 0.854540 - 0.135059I$	$-2.99504 + 2.52590I$	$-15.3721 - 4.9240I$
$c = \ \ 0.76523 - 1.50364I$		
$d = \ \ 1.77463 - 3.06017I$		

II.

$$\boldsymbol{I_2^u = \langle 5.03\times 10^{17}u^{34}-6.24\times 10^{17}u^{33}+\cdots+3.03\times 10^{18}d+2.20\times 10^{18},\ -6.43\times 10^{19}u^{34}-3.75\times 10^{19}u^{33}+\cdots+4.84\times 10^{19}c+2.57\times 10^{19},\ 4.97\times 10^{18}au^{34}-6.75\times 10^{18}u^{34}+\cdots-1.88\times 10^{19}a-4.81\times 10^{19},\ -5.09\times 10^{19}au^{34}-2.42\times 10^{19}u^{34}+\cdots-2.00\times 10^{19}a-6.67\times 10^{19},\ u^{35}+u^{34}+\cdots-8u-4\rangle}$$

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1.32710u^{34}+0.774224u^{33}+\cdots-7.47663u-0.530644 \\ -0.166074u^{34}+0.206243u^{33}+\cdots+0.520915u-0.726173 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} a \\ -0.410603au^{34}+0.558070u^{34}+\cdots+1.55425a+3.97461 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1.21768u^{34}+0.482146u^{33}+\cdots-5.66991u+0.141282 \\ 0.232442u^{34}+1.70045u^{33}+\cdots-8.44317u-6.53055 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} a \\ 0.410603au^{34}-0.558070u^{34}+\cdots-1.55425a-3.97461 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.410603au^{34}-0.558070u^{34}+\cdots-0.554254a-3.97461 \\ 0.410603au^{34}-0.558070u^{34}+\cdots-1.55425a-3.97461 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.558070au^{34}+2.05125u^{34}+\cdots-3.97461a+4.17014 \\ 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.654987u^{34}-0.535216u^{33}+\cdots+1.28424u+4.11539 \\ 0.556375u^{34}+1.25106u^{33}+\cdots-7.37715u-4.37512 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1.49318u^{34}-0.567981u^{33}+\cdots+7.99754u-0.195529 \\ 0.558070u^{34}-0.392605u^{33}+\cdots+1.94978u+2.97461 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{22672372767718895251}{6052032860907500938}u^{34}+\frac{26762652226596727431}{6052032860907500938}u^{33}+\cdots-\frac{270510416900889983975}{6052032860907500938}u-\frac{78654406032569267566}{3026016430453750469}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{70}+39u^{69}+\cdots+2336u+256$
c_2, c_5	$u^{70}-3u^{69}+\cdots-56u+16$
c_3	$(u^{35}-u^{34}+\cdots-8u+4)^2$
c_4, c_{12}	$u^{70}+3u^{69}+\cdots+56u+16$
c_6	$(u^{35}+2u^{34}+\cdots-2u^2+1)^2$
c_7	$(u^{35}+u^{34}+\cdots-8u-4)^2$
c_8	$(u^{35}+12u^{34}+\cdots+4u-1)^2$
c_9	$(u^{35}-2u^{34}+\cdots+2u^2-1)^2$
c_{10}	$(u^{35}-12u^{34}+\cdots+4u+1)^2$
c_{11}	$u^{70}-39u^{69}+\cdots-2336u+256$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{70} - 19y^{69} + \cdots - 1270272y + 65536$
c_2, c_4, c_5 c_{12}	$y^{70} - 39y^{69} + \cdots - 2336y + 256$
c_3, c_7	$(y^{35} + 15y^{34} + \cdots - 72y - 16)^2$
c_6, c_9	$(y^{35} + 12y^{34} + \cdots + 4y - 1)^2$
c_8, c_{10}	$(y^{35} + 24y^{34} + \cdots + 40y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.207372 + 0.975503I$		
$a = 0.810975 - 0.957053I$		
$b = -0.484647 + 0.608181I$	$0.32534 + 1.86508I$	$-3.98051 - 2.70414I$
$c = 1.062090 + 0.321806I$		
$d = 1.38172 + 0.97448I$		
$u = 0.207372 + 0.975503I$		
$a = 0.431780 + 0.018192I$		
$b = 1.311890 - 0.097404I$	$0.32534 + 1.86508I$	$-3.98051 - 2.70414I$
$c = 1.062090 + 0.321806I$		
$d = 1.38172 + 0.97448I$		
$u = 0.207372 - 0.975503I$		
$a = 0.810975 + 0.957053I$		
$b = -0.484647 - 0.608181I$	$0.32534 - 1.86508I$	$-3.98051 + 2.70414I$
$c = 1.062090 - 0.321806I$		
$d = 1.38172 - 0.97448I$		
$u = 0.207372 - 0.975503I$		
$a = 0.431780 - 0.018192I$		
$b = 1.311890 + 0.097404I$	$0.32534 - 1.86508I$	$-3.98051 + 2.70414I$
$c = 1.062090 - 0.321806I$		
$d = 1.38172 - 0.97448I$		
$u = -0.325740 + 0.904391I$		
$a = 0.825073 + 0.782270I$		
$b = -0.361740 - 0.605148I$	$-0.525136 - 0.811264I$	$-5.97406 - 0.21615I$
$c = -0.713255 + 1.217410I$		
$d = 0.786266 - 0.470892I$		
$u = -0.325740 + 0.904391I$		
$a = 0.40485 - 2.13305I$		
$b = -0.914115 + 0.452512I$	$-0.525136 - 0.811264I$	$-5.97406 - 0.21615I$
$c = -0.713255 + 1.217410I$		
$d = 0.786266 - 0.470892I$		

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.325740-0.904391I$ $a=\ \ 0.825073-0.782270I$ $b=-0.361740+0.605148I$ $c=-0.713255-1.217410I$ $d=\ \ 0.786266+0.470892I$	$-0.525136+0.811264I$	$-5.97406+0.21615I$
$u=-0.325740-0.904391I$ $a=\ \ 0.40485+2.13305I$ $b=-0.914115-0.452512I$ $c=-0.713255-1.217410I$ $d=\ \ 0.786266+0.470892I$	$-0.525136+0.811264I$	$-5.97406+0.21615I$
$u=-0.365087+0.973537I$ $a=\ \ 0.740296+0.786236I$ $b=-0.365209-0.674183I$ $c=\ \ 1.302500-0.057465I$ $d=\ \ 1.76334-0.68298I$	$-0.19294+3.49535I$	$-5.62111-3.75014I$
$u=-0.365087+0.973537I$ $a=\ \ 0.430751-0.032296I$ $b=\ \ 1.308550+0.173084I$ $c=\ \ 1.302500-0.057465I$ $d=\ \ 1.76334-0.68298I$	$-0.19294+3.49535I$	$-5.62111-3.75014I$
$u=-0.365087-0.973537I$ $a=\ \ 0.740296-0.786236I$ $b=-0.365209+0.674183I$ $c=\ \ 1.302500+0.057465I$ $d=\ \ 1.76334+0.68298I$	$-0.19294-3.49535I$	$-5.62111+3.75014I$
$u=-0.365087-0.973537I$ $a=\ \ 0.430751+0.032296I$ $b=\ \ 1.308550-0.173084I$ $c=\ \ 1.302500+0.057465I$ $d=\ \ 1.76334+0.68298I$	$-0.19294-3.49535I$	$-5.62111+3.75014I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.655999 + 0.827108I$ $a = 0.439925 + 0.062584I$ $b = 1.228020 - 0.316960I$ $c = -0.742711 + 0.708889I$ $d = -1.277850 - 0.434606I$	$-7.12278 - 2.53588I$	$-15.8469 + 3.8333I$
$u = 0.655999 + 0.827108I$ $a = -0.70483 + 2.22687I$ $b = -1.129190 - 0.408170I$ $c = -0.742711 + 0.708889I$ $d = -1.277850 - 0.434606I$	$-7.12278 - 2.53588I$	$-15.8469 + 3.8333I$
$u = 0.655999 - 0.827108I$ $a = 0.439925 - 0.062584I$ $b = 1.228020 + 0.316960I$ $c = -0.742711 - 0.708889I$ $d = -1.277850 + 0.434606I$	$-7.12278 + 2.53588I$	$-15.8469 - 3.8333I$
$u = 0.655999 - 0.827108I$ $a = -0.70483 - 2.22687I$ $b = -1.129190 + 0.408170I$ $c = -0.742711 - 0.708889I$ $d = -1.277850 + 0.434606I$	$-7.12278 + 2.53588I$	$-15.8469 - 3.8333I$
$u = -0.705852 + 0.611410I$ $a = 0.700829 + 0.414305I$ $b = 0.057360 - 0.625074I$ $c = 0.666953 + 0.717828I$ $d = 1.37809 + 0.36840I$	$-3.90189 - 1.16771I$	$-12.59463 + 0.48242I$
$u = -0.705852 + 0.611410I$ $a = 0.462699 - 0.073809I$ $b = 1.107600 + 0.336202I$ $c = 0.666953 + 0.717828I$ $d = 1.37809 + 0.36840I$	$-3.90189 - 1.16771I$	$-12.59463 + 0.48242I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.705852-0.611410I$		
$a=\ 0.700829-0.414305I$		
$b=\ 0.057360+0.625074I$	$-3.90189+1.16771I$	$-12.59463-0.48242I$
$c=\ 0.666953-0.717828I$		
$d=\ 1.37809-0.36840I$		
$u=-0.705852-0.611410I$		
$a=\ 0.462699+0.073809I$		
$b=\ 1.107600-0.336202I$	$-3.90189+1.16771I$	$-12.59463-0.48242I$
$c=\ 0.666953-0.717828I$		
$d=\ 1.37809-0.36840I$		
$u=\ 1.045080+0.368116I$		
$a=\ 0.564228-0.293694I$		
$b=\ 0.394500+0.725871I$	$1.47991+0.62379I$	$-5.11442+0.32782I$
$c=-0.295299-0.937240I$		
$d=\ 0.623699-0.729903I$		
$u=\ 1.045080+0.368116I$		
$a=\ 0.475227+0.134196I$		
$b=\ 0.948855-0.550324I$	$1.47991+0.62379I$	$-5.11442+0.32782I$
$c=-0.295299-0.937240I$		
$d=\ 0.623699-0.729903I$		
$u=\ 1.045080-0.368116I$		
$a=\ 0.564228+0.293694I$		
$b=\ 0.394500-0.725871I$	$1.47991-0.62379I$	$-5.11442-0.32782I$
$c=-0.295299+0.937240I$		
$d=\ 0.623699+0.729903I$		
$u=\ 1.045080-0.368116I$		
$a=\ 0.475227-0.134196I$		
$b=\ 0.948855+0.550324I$	$1.47991-0.62379I$	$-5.11442-0.32782I$
$c=-0.295299+0.937240I$		
$d=\ 0.623699+0.729903I$		

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.713294 + 0.504864I$ $a = 0.476506 + 0.077725I$ $b = 1.044220 - 0.333440I$ $c = 0.25773 + 1.47872I$ $d = -0.679626 + 0.385702I$	$-3.98776 + 3.19845I$	$-13.06265 - 3.08489I$
$u = 0.713294 + 0.504864I$ $a = -2.05407 + 2.74671I$ $b = -1.174610 - 0.233492I$ $c = 0.25773 + 1.47872I$ $d = -0.679626 + 0.385702I$	$-3.98776 + 3.19845I$	$-13.06265 - 3.08489I$
$u = 0.713294 - 0.504864I$ $a = 0.476506 - 0.077725I$ $b = 1.044220 + 0.333440I$ $c = 0.25773 - 1.47872I$ $d = -0.679626 - 0.385702I$	$-3.98776 - 3.19845I$	$-13.06265 + 3.08489I$
$u = 0.713294 - 0.504864I$ $a = -2.05407 - 2.74671I$ $b = -1.174610 + 0.233492I$ $c = 0.25773 - 1.47872I$ $d = -0.679626 - 0.385702I$	$-3.98776 - 3.19845I$	$-13.06265 + 3.08489I$
$u = 0.413724 + 1.080130I$ $a = 0.635679 - 0.786411I$ $b = -0.378327 + 0.769084I$ $c = -0.137887 - 0.497562I$ $d = 0.633660 + 0.873788I$	$1.87781 - 3.59908I$	$-3.00767 + 3.96847I$
$u = 0.413724 + 1.080130I$ $a = 0.05598 + 1.74978I$ $b = -0.981735 - 0.570915I$ $c = -0.137887 - 0.497562I$ $d = 0.633660 + 0.873788I$	$1.87781 - 3.59908I$	$-3.00767 + 3.96847I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.413724 - 1.080130I$ $a = 0.635679 + 0.786411I$ $b = -0.378327 - 0.769084I$ $c = -0.137887 + 0.497562I$ $d = 0.633660 - 0.873788I$	$1.87781 + 3.59908I$	$-3.00767 - 3.96847I$
$u = 0.413724 - 1.080130I$ $a = 0.05598 - 1.74978I$ $b = -0.981735 + 0.570915I$ $c = -0.137887 + 0.497562I$ $d = 0.633660 - 0.873788I$	$1.87781 + 3.59908I$	$-3.00767 - 3.96847I$
$u = -0.511698 + 1.037850I$ $a = 0.422963 - 0.044547I$ $b = 1.338330 + 0.246276I$ $c = -0.851453 + 0.290444I$ $d = -1.12077 + 1.41710I$	$-1.31903 + 2.68874I$	$-7.41111 - 2.89622I$
$u = -0.511698 + 1.037850I$ $a = -0.14705 - 1.84591I$ $b = -1.042890 + 0.538322I$ $c = -0.851453 + 0.290444I$ $d = -1.12077 + 1.41710I$	$-1.31903 + 2.68874I$	$-7.41111 - 2.89622I$
$u = -0.511698 - 1.037850I$ $a = 0.422963 + 0.044547I$ $b = 1.338330 - 0.246276I$ $c = -0.851453 - 0.290444I$ $d = -1.12077 - 1.41710I$	$-1.31903 - 2.68874I$	$-7.41111 + 2.89622I$
$u = -0.511698 - 1.037850I$ $a = -0.14705 + 1.84591I$ $b = -1.042890 - 0.538322I$ $c = -0.851453 - 0.290444I$ $d = -1.12077 - 1.41710I$	$-1.31903 - 2.68874I$	$-7.41111 + 2.89622I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.060110+0.482223I$ $a=\ \ 0.558487+0.331278I$ $b=\ \ 0.324518-0.785666I$ $c=-0.126269+1.234200I$ $d=\ \ 0.801891+0.960827I$	$0.71766-6.15318I$	$-6.72324+5.00692I$
$u=-1.060110+0.482223I$ $a=\ \ 0.459428-0.125654I$ $b=\ \ 1.025140+0.553877I$ $c=-0.126269+1.234200I$ $d=\ \ 0.801891+0.960827I$	$0.71766-6.15318I$	$-6.72324+5.00692I$
$u=-1.060110-0.482223I$ $a=\ \ 0.558487-0.331278I$ $b=\ \ 0.324518+0.785666I$ $c=-0.126269-1.234200I$ $d=\ \ 0.801891-0.960827I$	$0.71766+6.15318I$	$-6.72324-5.00692I$
$u=-1.060110-0.482223I$ $a=\ \ 0.459428+0.125654I$ $b=\ \ 1.025140-0.553877I$ $c=-0.126269-1.234200I$ $d=\ \ 0.801891-0.960827I$	$0.71766+6.15318I$	$-6.72324-5.00692I$
$u=-0.600323+1.020000I$ $a=\ \ 0.612638+0.649478I$ $b=-0.231461-0.814754I$ $c=\ \ 0.755428+0.748346I$ $d=\ \ 1.13345-1.05223I$	$-2.63440+6.20108I$	$-10.04876-5.89177I$
$u=-0.600323+1.020000I$ $a=-0.34236-1.84493I$ $b=-1.097230+0.523982I$ $c=\ \ 0.755428+0.748346I$ $d=\ \ 1.13345-1.05223I$	$-2.63440+6.20108I$	$-10.04876-5.89177I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.600323-1.020000I$ $a=\ \ 0.612638-0.649478I$ $b=-0.231461+0.814754I$ $c=\ \ 0.755428-0.748346I$ $d=\ \ 1.13345+1.05223I$	$-2.63440-6.20108I$	$-10.04876+5.89177I$
$u=-0.600323-1.020000I$ $a=-0.34236+1.84493I$ $b=-1.097230-0.523982I$ $c=\ \ 0.755428-0.748346I$ $d=\ \ 1.13345+1.05223I$	$-2.63440-6.20108I$	$-10.04876+5.89177I$
$u=\ \ 0.597289+1.062760I$ $a=\ \ 0.419111+0.051606I$ $b=\ \ 1.350370-0.289408I$ $c=-1.213230-0.187249I$ $d=-1.51066-1.39568I$	$-2.31683-8.24742I$	$-9.43055+7.59916I$
$u=\ \ 0.597289+1.062760I$ $a=-0.31098+1.76298I$ $b=-1.097030-0.550106I$ $c=-1.213230-0.187249I$ $d=-1.51066-1.39568I$	$-2.31683-8.24742I$	$-9.43055+7.59916I$
$u=\ \ 0.597289-1.062760I$ $a=\ \ 0.419111-0.051606I$ $b=\ \ 1.350370+0.289408I$ $c=-1.213230+0.187249I$ $d=-1.51066+1.39568I$	$-2.31683+8.24742I$	$-9.43055-7.59916I$
$u=\ \ 0.597289-1.062760I$ $a=-0.31098-1.76298I$ $b=-1.097030+0.550106I$ $c=-1.213230+0.187249I$ $d=-1.51066+1.39568I$	$-2.31683+8.24742I$	$-9.43055-7.59916I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.329730+0.664757I$ $a=\ 0.460522-0.030841I$ $b=\ 1.161750+0.144773I$ $c=\ 0.263271-0.249266I$ $d=-0.242861+0.429341I$	$-3.05354+1.15463I$	$-8.48725-5.51426I$
$u=-0.329730+0.664757I$ $a=\ 0.74666-3.40319I$ $b=-0.938492+0.280347I$ $c=\ 0.263271-0.249266I$ $d=-0.242861+0.429341I$	$-3.05354+1.15463I$	$-8.48725-5.51426I$
$u=-0.329730-0.664757I$ $a=\ 0.460522+0.030841I$ $b=\ 1.161750-0.144773I$ $c=\ 0.263271+0.249266I$ $d=-0.242861-0.429341I$	$-3.05354-1.15463I$	$-8.48725+5.51426I$
$u=-0.329730-0.664757I$ $a=\ 0.74666+3.40319I$ $b=-0.938492-0.280347I$ $c=\ 0.263271+0.249266I$ $d=-0.242861-0.429341I$	$-3.05354-1.15463I$	$-8.48725+5.51426I$
$u=\ 0.047497+1.362920I$ $a=\ 0.362035-1.073040I$ $b=-0.717707+0.836690I$ $c=-1.045080+0.054003I$ $d=-0.534004+0.168050I$	$8.17684-3.01120I$	$-1.89563+2.75790I$
$u=\ 0.047497+1.362920I$ $a=\ 0.310277+1.144270I$ $b=-0.779261-0.814064I$ $c=-1.045080+0.054003I$ $d=-0.534004+0.168050I$	$8.17684-3.01120I$	$-1.89563+2.75790I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.047497 - 1.362920I$ $a = 0.362035 + 1.073040I$ $b = -0.717707 - 0.836690I$ $c = -1.045080 - 0.054003I$ $d = -0.534004 - 0.168050I$	$8.17684 + 3.01120I$	$-1.89563 - 2.75790I$
$u = 0.047497 - 1.362920I$ $a = 0.310277 - 1.144270I$ $b = -0.779261 + 0.814064I$ $c = -1.045080 - 0.054003I$ $d = -0.534004 - 0.168050I$	$8.17684 + 3.01120I$	$-1.89563 - 2.75790I$
$u = 0.642257 + 1.206250I$ $a = 0.508332 - 0.676520I$ $b = -0.290119 + 0.944754I$ $c = 0.815617 + 0.201286I$ $d = 0.92631 + 1.64279I$	$4.15268 - 6.65019I$	$-3.95665 + 3.46663I$
$u = 0.642257 + 1.206250I$ $a = -0.31655 + 1.51284I$ $b = -1.132510 - 0.633283I$ $c = 0.815617 + 0.201286I$ $d = 0.92631 + 1.64279I$	$4.15268 - 6.65019I$	$-3.95665 + 3.46663I$
$u = 0.642257 - 1.206250I$ $a = 0.508332 + 0.676520I$ $b = -0.290119 - 0.944754I$ $c = 0.815617 - 0.201286I$ $d = 0.92631 - 1.64279I$	$4.15268 + 6.65019I$	$-3.95665 - 3.46663I$
$u = 0.642257 - 1.206250I$ $a = -0.31655 - 1.51284I$ $b = -1.132510 + 0.633283I$ $c = 0.815617 - 0.201286I$ $d = 0.92631 - 1.64279I$	$4.15268 + 6.65019I$	$-3.95665 - 3.46663I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.626561$ $a = 0.632339 + 0.026645I$ $b = 0.578626 - 0.066519I$ $c = 0.191221$ $d = 0.884921$	-1.07873	-7.97520
$u = 0.626561$ $a = 0.632339 - 0.026645I$ $b = 0.578626 + 0.066519I$ $c = 0.191221$ $d = 0.884921$	-1.07873	-7.97520
$u = -0.532829 + 0.309500I$ $a = 0.506148 - 0.049944I$ $b = 0.956655 + 0.193071I$ $c = 1.018580 - 0.903408I$ $d = -0.157037 - 0.201603I$	$-3.17896 + 1.46996I$	$-12.94917 - 3.34118I$
$u = -0.532829 + 0.309500I$ $a = -3.92552 - 4.75017I$ $b = -1.103370 + 0.125091I$ $c = 1.018580 - 0.903408I$ $d = -0.157037 - 0.201603I$	$-3.17896 + 1.46996I$	$-12.94917 - 3.34118I$
$u = -0.532829 - 0.309500I$ $a = 0.506148 + 0.049944I$ $b = 0.956655 - 0.193071I$ $c = 1.018580 + 0.903408I$ $d = -0.157037 + 0.201603I$	$-3.17896 - 1.46996I$	$-12.94917 + 3.34118I$
$u = -0.532829 - 0.309500I$ $a = -3.92552 + 4.75017I$ $b = -1.103370 - 0.125091I$ $c = 1.018580 + 0.903408I$ $d = -0.157037 + 0.201603I$	$-3.17896 - 1.46996I$	$-12.94917 + 3.34118I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.704423+1.193170I$ $a=\ \ 0.502880+0.645463I$ $b=-0.248885-0.964082I$ $c=\ \ 1.137410-0.208123I$ $d=\ \ 1.15191-1.72817I$	$2.99525+12.51090I$	$-5.90812-8.16035I$
$u=-0.704423+1.193170I$ $a=-0.40526-1.50005I$ $b=-1.167850+0.621297I$ $c=\ \ 1.137410-0.208123I$ $d=\ \ 1.15191-1.72817I$	$2.99525+12.51090I$	$-5.90812-8.16035I$
$u=-0.704423-1.193170I$ $a=\ \ 0.502880-0.645463I$ $b=-0.248885+0.964082I$ $c=\ \ 1.137410+0.208123I$ $d=\ \ 1.15191+1.72817I$	$2.99525-12.51090I$	$-5.90812+8.16035I$
$u=-0.704423-1.193170I$ $a=-0.40526+1.50005I$ $b=-1.167850-0.621297I$ $c=\ \ 1.137410+0.208123I$ $d=\ \ 1.15191+1.72817I$	$2.99525-12.51090I$	$-5.90812+8.16035I$

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

(i) Arc colorings

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

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

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

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

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

$$a_9 = \begin{pmatrix} v \\ v \end{pmatrix}$$

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

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

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

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

$$a_{10} = \begin{pmatrix} v+1 \\ v \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_3 c_4, c_7	u^2
c_5	$(u+1)^2$
c_6, c_{10}	u^2+u+1
c_8, c_9	u^2-u+1
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_4, c_7	y^2
c_5, c_{11}, c_{12}	$(y-1)^2$
c_6, c_8, c_9 c_{10}	y^2+y+1

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = -0.500000 + 0.866025I$		
$a = 1.00000$		
$b = 0$	$-1.64493 + 2.02988I$	$-9.00000 - 3.46410I$
$c = 0$		
$d = -1.00000$		
$v = -0.500000 - 0.866025I$		
$a = 1.00000$		
$b = 0$	$-1.64493 - 2.02988I$	$-9.00000 + 3.46410I$
$c = 0$		
$d = -1.00000$		

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = -1.00000$		
$a = 0$		
$b = 1.00000$	-3.28987	-12.0000
$c = -1.00000$		
$d = 0$		

VI. $\boldsymbol{I_4^v = \langle a,\ d^2v^2 - dv + 1,\ v^2dc - v^2d + \cdots + a + v,\ da - c + 1,\ c^2v^2 - 2v^2c + \cdots + a^2 + av,\ b - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -d^3v + 4dv + v^2 - 16$

(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	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v=\cdots$		
$a=\cdots$		
$b=\cdots$	$-3.28987+2.02988I$	$-13.38669+2.91767I$
$c=\cdots$		
$d=\cdots$		

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^2(u-1)^3(u^{43}+19u^{42}+\cdots+11u+1)$
c_2	$u^2(u-1)^3(u^{43}-5u^{42}+\cdots-5u+1)$
c_3, c_7	$u^5(u^{43}+3u^{42}+\cdots+64u+32)$
c_4	$u^2(u+1)^3(u^{43}-5u^{42}+\cdots-5u+1)$
c_5	$u^2(u-1)(u+1)^2(u^{43}-5u^{42}+\cdots-5u+1)$
c_6	$u(u^2+u+1)^2(u^{43}+u^{42}+\cdots+8u+4)$
c_8	$u(u^2-u+1)^2(u^{43}+15u^{42}+\cdots+88u-16)$
c_9	$u(u^2-u+1)^2(u^{43}+u^{42}+\cdots+8u+4)$
c_{10}	$u(u^2+u+1)^2(u^{43}+15u^{42}+\cdots+88u-16)$
c_{12}	$u^2(u-1)^2(u+1)(u^{43}-5u^{42}+\cdots-5u+1)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^2(y-1)^3(y^{43}+21y^{42}+\cdots-117y-1)$
c_2, c_4, c_5 c_{12}	$y^2(y-1)^3(y^{43}-19y^{42}+\cdots+11y-1)$
c_3, c_7	$y^5(y^{43}+15y^{42}+\cdots-1024y-1024)$
c_6, c_9	$y(y^2+y+1)^2(y^{43}+15y^{42}+\cdots+88y-16)$
c_8, c_{10}	$y(y^2+y+1)^2(y^{43}+27y^{42}+\cdots+18208y-256)$