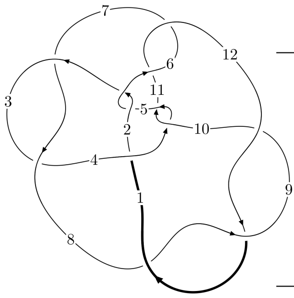
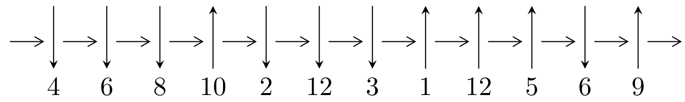
$12n_{0752}$ $(K12n_{0752})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 744551414u^{26} + 8999949826u^{25} + \cdots + 22161981703b - 63305998448, \\
& 51229810238u^{26} - 249479535086u^{25} + \cdots + 199457835327a - 467102435595, \\
& u^{27} - 7u^{26} + \cdots + 69u - 9\rangle \\
I_2^u = \langle & 4u^{16}a + 26u^{16} + \cdots + 14a + 91,\ 3u^{16}a + u^{16} + \cdots + 2a^2 + 8a,\ u^{17} + 3u^{16} + \cdots + 6u + 2\rangle \\
I_3^u = \langle & -u^{11} - 4u^{10} - 12u^9 - 25u^8 - 41u^7 - 54u^6 - 58u^5 - 51u^4 - 36u^3 - 20u^2 + b - 8u - 2, \\
& 2u^{12} + 3u^{11} + 8u^{10} - u^9 - 16u^8 - 58u^7 - 96u^6 - 131u^5 - 128u^4 - 105u^3 - 60u^2 + 5a - 28u - 4, \\
& u^{13} + 4u^{12} + 14u^{11} + 32u^{10} + 62u^9 + 96u^8 + 127u^7 + 142u^6 + 136u^5 + 110u^4 + 75u^3 + 41u^2 + 18u + 5\rangle \\
I_4^u = \langle & au + 3b - 4a + u - 1,\ 2a^2 + au + 2a + 4u + 3,\ u^2 + 2\rangle
\end{aligned}$$

$$\begin{aligned}
I_1^v &= \langle a,\ b - v + 2,\ v^2 - 3v + 1\rangle \\
I_2^v &= \langle a,\ b + 1,\ v - 1\rangle
\end{aligned}$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 81 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. $I_1^u =$ $\langle 7.45\times10^{8}u^{26}+9.00\times10^{9}u^{25}+\cdots+2.22\times10^{10}b-6.33\times10^{10},\ 5.12\times10^{10}u^{26}-2.49\times10^{11}u^{25}+\cdots+1.99\times10^{11}a-4.67\times10^{11},\ u^{27}-7u^{26}+\cdots+69u-9\rangle$

(i) Arc colorings

$$a_9 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-0.256845u^{26}+1.25079u^{25}+\cdots-19.8801u+2.34186\\-0.0335959u^{26}-0.406099u^{25}+\cdots-23.3945u+2.85651\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-0.427192u^{26}+2.42462u^{25}+\cdots-7.83439u+0.274214\\-0.209462u^{26}+0.793385u^{25}+\cdots-23.1446u+3.02389\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-0.373198u^{26}+2.43639u^{25}+\cdots+40.6429u-5.57365\\0.0280075u^{26}-0.274253u^{25}+\cdots-15.2417u+2.73067\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0.127411u^{26}-0.794874u^{25}+\cdots-16.3288u+2.33469\\-0.220571u^{26}+1.67833u^{25}+\cdots+25.7235u-4.23181\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u^2+1\\u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}0.229738u^{26}-1.43782u^{25}+\cdots-31.4394u+3.80620\\0.547129u^{26}-3.69315u^{25}+\cdots-20.0642u+2.31161\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0.127411u^{26}-0.794874u^{25}+\cdots-16.3288u+2.33469\\-0.175997u^{26}+1.30098u^{25}+\cdots+20.1770u-3.35878\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0.0573242u^{26}-0.330383u^{25}+\cdots-10.9429u+1.67117\\-0.215260u^{26}+1.35737u^{25}+\cdots+7.85099u-1.02783\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{23743057753}{22161981703}u^{26}+\frac{150829290172}{22161981703}u^{25}+\cdots+\frac{2639501882667}{22161981703}u-\frac{630292627959}{22161981703}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_7	$u^{27} - u^{26} + \cdots + 10u - 1$
c_2, c_5	$u^{27} + 11u^{26} + \cdots - 78u - 9$
c_4, c_{10}	$u^{27} - 2u^{26} + \cdots + u + 1$
c_6, c_{11}	$u^{27} - 2u^{26} + \cdots + 4u + 3$
c_8, c_9, c_{12}	$u^{27} + 7u^{26} + \cdots + 69u + 9$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_7	$y^{27} - 25y^{26} + \cdots + 26y - 1$
c_2, c_5	$y^{27} - 7y^{26} + \cdots - 54y - 81$
c_4, c_{10}	$y^{27} - 22y^{26} + \cdots + 29y - 1$
c_6, c_{11}	$y^{27} + 22y^{26} + \cdots + 124y - 9$
c_8, c_9, c_{12}	$y^{27} + 25y^{26} + \cdots - 1917y - 81$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.953904 + 0.354754I$ $a = -1.047780 + 0.649531I$ $b = -0.214567 - 0.456094I$	$4.79569 + 10.60650I$	$-1.90397 - 7.23090I$
$u = 0.953904 - 0.354754I$ $a = -1.047780 - 0.649531I$ $b = -0.214567 + 0.456094I$	$4.79569 - 10.60650I$	$-1.90397 + 7.23090I$
$u = 0.933040 + 0.188802I$ $a = 1.160420 - 0.702560I$ $b = 0.051443 + 0.277504I$	$4.62437 + 2.47514I$	$-0.34993 - 2.26822I$
$u = 0.933040 - 0.188802I$ $a = 1.160420 + 0.702560I$ $b = 0.051443 - 0.277504I$	$4.62437 - 2.47514I$	$-0.34993 + 2.26822I$
$u = -0.478298 + 1.051980I$ $a = 0.189785 - 0.449325I$ $b = -0.036183 - 0.475615I$	$-0.42491 - 2.93654I$	$4.22853 + 4.23030I$
$u = -0.478298 - 1.051980I$ $a = 0.189785 + 0.449325I$ $b = -0.036183 + 0.475615I$	$-0.42491 + 2.93654I$	$4.22853 - 4.23030I$
$u = -0.645899 + 0.517518I$ $a = 0.674135 + 0.117637I$ $b = 0.442860 - 0.100682I$	$1.19510 - 1.40624I$	$0.86573 + 1.18666I$
$u = -0.645899 - 0.517518I$ $a = 0.674135 - 0.117637I$ $b = 0.442860 + 0.100682I$	$1.19510 + 1.40624I$	$0.86573 - 1.18666I$
$u = 0.721039 + 0.972434I$ $a = -0.052879 - 0.387807I$ $b = 0.717442 - 0.773808I$	$2.98852 - 4.83503I$	$-4.24483 + 4.00030I$
$u = 0.721039 - 0.972434I$ $a = -0.052879 + 0.387807I$ $b = 0.717442 + 0.773808I$	$2.98852 + 4.83503I$	$-4.24483 - 4.00030I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.553346 + 1.170330I$ $a = -0.353880 + 0.426742I$ $b = -1.03955 + 0.97978I$	$1.66563 + 2.80958I$	$-3.84805 - 1.74078I$
$u = 0.553346 - 1.170330I$ $a = -0.353880 - 0.426742I$ $b = -1.03955 - 0.97978I$	$1.66563 - 2.80958I$	$-3.84805 + 1.74078I$
$u = 0.654565$ $a = -1.70509$ $b = 0.498180$	-7.54449	-20.1420
$u = 0.025050 + 1.359590I$ $a = -0.84354 + 1.28631I$ $b = -0.46291 + 2.19675I$	$-6.22130 + 0.13227I$	$-6.04494 + 0.29033I$
$u = 0.025050 - 1.359590I$ $a = -0.84354 - 1.28631I$ $b = -0.46291 - 2.19675I$	$-6.22130 - 0.13227I$	$-6.04494 - 0.29033I$
$u = 0.255910 + 1.345710I$ $a = 0.724542 - 1.206850I$ $b = 0.67761 - 2.38128I$	$-11.88730 + 3.29707I$	$-9.75000 + 3.82687I$
$u = 0.255910 - 1.345710I$ $a = 0.724542 + 1.206850I$ $b = 0.67761 + 2.38128I$	$-11.88730 - 3.29707I$	$-9.75000 - 3.82687I$
$u = 0.00342 + 1.44547I$ $a = -0.51617 + 1.50351I$ $b = -0.02636 + 2.23591I$	$-6.76916 + 0.50453I$	$-6.09785 - 2.87578I$
$u = 0.00342 - 1.44547I$ $a = -0.51617 - 1.50351I$ $b = -0.02636 - 2.23591I$	$-6.76916 - 0.50453I$	$-6.09785 + 2.87578I$
$u = 0.38425 + 1.40937I$ $a = -0.04227 + 1.48372I$ $b = 0.22763 + 2.62497I$	$-0.46126 + 7.18382I$	$-3.58916 - 3.85062I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.38425 - 1.40937I$ $a = -0.04227 - 1.48372I$ $b = 0.22763 - 2.62497I$	$-0.46126 - 7.18382I$	$-3.58916 + 3.85062I$
$u = 0.37205 + 1.48920I$ $a = -0.05733 - 1.69219I$ $b = -0.38069 - 2.77325I$	$-1.1155 + 15.3839I$	$-5.17512 - 7.69230I$
$u = 0.37205 - 1.48920I$ $a = -0.05733 + 1.69219I$ $b = -0.38069 + 2.77325I$	$-1.1155 - 15.3839I$	$-5.17512 + 7.69230I$
$u = 0.01460 + 1.56688I$ $a = 0.523915 - 1.145590I$ $b = 0.30647 - 1.70007I$	$-6.50814 - 3.09204I$	$-6.77423 + 4.55905I$
$u = 0.01460 - 1.56688I$ $a = 0.523915 + 1.145590I$ $b = 0.30647 + 1.70007I$	$-6.50814 + 3.09204I$	$-6.77423 - 4.55905I$
$u = 0.080303 + 0.257685I$ $a = -0.67306 - 2.09112I$ $b = -0.512295 + 0.381584I$	$-1.138560 + 0.334603I$	$-9.24522 - 1.52255I$
$u = 0.080303 - 0.257685I$ $a = -0.67306 + 2.09112I$ $b = -0.512295 - 0.381584I$	$-1.138560 - 0.334603I$	$-9.24522 + 1.52255I$

II. $\boldsymbol{I_2^u = \langle 4u^{16}a + 26u^{16} + \cdots + 14a + 91,\ 3u^{16}a + u^{16} + \cdots + 2a^2 + 8a,\ u^{17} + 3u^{16} + \cdots + 6u + 2\rangle}$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a \\ -0.108108au^{16} - 0.702703u^{16} + \cdots - 0.378378a - 2.45946 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.108108au^{16} - 0.702703u^{16} + \cdots + 0.621622a - 2.45946 \\ -0.297297au^{16} - 1.43243u^{16} + \cdots - 0.540541a - 2.51351 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0270270au^{16} + 0.175676u^{16} + \cdots - 2.40541a - 1.13514 \\ 0.729730au^{16} + 0.243243u^{16} + \cdots + 0.0540541a - 1.64865 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.243243au^{16} - 0.581081u^{16} + \cdots - 1.35135a - 2.78378 \\ 0.0540541au^{16} - 0.648649u^{16} + \cdots - 0.810811a - 2.27027 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.189189au^{16} - 0.270270u^{16} + \cdots + 1.16216a - 2.94595 \\ -u^{16} - 3u^{15} + \cdots - 5u - 3 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.243243au^{16} - 0.581081u^{16} + \cdots - 1.35135a - 2.78378 \\ -0.270270au^{16} - 0.756757u^{16} + \cdots + 0.0540541a - 2.64865 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.0810811au^{16} - 0.472973u^{16} + \cdots - 0.216216a - 2.40541 \\ -0.324324au^{16} - 0.108108u^{16} + \cdots - 1.13514a - 2.37838 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 3u^{16} + 9u^{15} + 35u^{14} + 74u^{13} + 150u^{12} + 231u^{11} + 301u^{10} + 324u^9 + 266u^8 + 150u^7 + 22u^6 - 76u^5 - 96u^4 - 61u^3 - 15u^2 + 12u + 14$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_7	$u^{34} + 2u^{33} + \cdots + 51u - 23$
c_2, c_5	$(u^{17} - 4u^{16} + \cdots - 4u + 1)^2$
c_4, c_{10}	$u^{34} - 15u^{32} + \cdots - 37u + 61$
c_6, c_{11}	$u^{34} + 3u^{33} + \cdots - 682u - 121$
c_8, c_9, c_{12}	$(u^{17} - 3u^{16} + \cdots + 6u - 2)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_7	$y^{34} - 6y^{33} + \cdots - 7293y + 529$
c_2, c_5	$(y^{17} - 2y^{16} + \cdots - 4y - 1)^2$
c_4, c_{10}	$y^{34} - 30y^{33} + \cdots - 156553y + 3721$
c_6, c_{11}	$y^{34} + 29y^{33} + \cdots + 783838y + 14641$
c_8, c_9, c_{12}	$(y^{17} + 17y^{16} + \cdots + 52y - 4)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.700839 + 0.661242I$ $a = -0.142439 - 0.723173I$ $b = -0.131868 + 0.225388I$	$0.33195 - 3.39163I$	$-2.33298 + 11.95319I$
$u = -0.700839 + 0.661242I$ $a = 0.440456 - 0.231356I$ $b = 0.065889 - 0.965375I$	$0.33195 - 3.39163I$	$-2.33298 + 11.95319I$
$u = -0.700839 - 0.661242I$ $a = -0.142439 + 0.723173I$ $b = -0.131868 - 0.225388I$	$0.33195 + 3.39163I$	$-2.33298 - 11.95319I$
$u = -0.700839 - 0.661242I$ $a = 0.440456 + 0.231356I$ $b = 0.065889 + 0.965375I$	$0.33195 + 3.39163I$	$-2.33298 - 11.95319I$
$u = -0.826403 + 0.349944I$ $a = 1.075520 + 0.373580I$ $b = 0.414461 - 0.303701I$	$1.33448 - 1.66721I$	$5.61922 + 1.37527I$
$u = -0.826403 + 0.349944I$ $a = 0.164500 - 0.258544I$ $b = 0.390587 + 0.201368I$	$1.33448 - 1.66721I$	$5.61922 + 1.37527I$
$u = -0.826403 - 0.349944I$ $a = 1.075520 - 0.373580I$ $b = 0.414461 + 0.303701I$	$1.33448 + 1.66721I$	$5.61922 - 1.37527I$
$u = -0.826403 - 0.349944I$ $a = 0.164500 + 0.258544I$ $b = 0.390587 - 0.201368I$	$1.33448 + 1.66721I$	$5.61922 - 1.37527I$
$u = 0.177657 + 1.249920I$ $a = 0.369639 + 0.260996I$ $b = -0.914870 + 0.498586I$	$3.03460 - 1.26688I$	$-4.55357 - 0.56113I$
$u = 0.177657 + 1.249920I$ $a = -1.00148 - 1.87787I$ $b = -1.23762 - 2.66817I$	$3.03460 - 1.26688I$	$-4.55357 - 0.56113I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.177657 - 1.249920I$ $a = 0.369639 - 0.260996I$ $b = -0.914870 - 0.498586I$	$3.03460 + 1.26688I$	$-4.55357 + 0.56113I$
$u = 0.177657 - 1.249920I$ $a = -1.00148 + 1.87787I$ $b = -1.23762 + 2.66817I$	$3.03460 + 1.26688I$	$-4.55357 + 0.56113I$
$u = 0.177527 + 1.341090I$ $a = 0.078205 - 0.428055I$ $b = 1.44700 - 0.65077I$	$2.28668 + 6.31784I$	$-5.66125 - 5.46008I$
$u = 0.177527 + 1.341090I$ $a = 1.01930 + 2.21437I$ $b = 1.22445 + 2.88700I$	$2.28668 + 6.31784I$	$-5.66125 - 5.46008I$
$u = 0.177527 - 1.341090I$ $a = 0.078205 + 0.428055I$ $b = 1.44700 + 0.65077I$	$2.28668 - 6.31784I$	$-5.66125 + 5.46008I$
$u = 0.177527 - 1.341090I$ $a = 1.01930 - 2.21437I$ $b = 1.22445 - 2.88700I$	$2.28668 - 6.31784I$	$-5.66125 + 5.46008I$
$u = -0.132324 + 1.358820I$ $a = -1.303170 - 0.221965I$ $b = -0.815188 - 0.630532I$	$-7.55907 - 1.70238I$	$-7.27343 + 3.59367I$
$u = -0.132324 + 1.358820I$ $a = 0.07650 + 1.87317I$ $b = 0.16530 + 3.22936I$	$-7.55907 - 1.70238I$	$-7.27343 + 3.59367I$
$u = -0.132324 - 1.358820I$ $a = -1.303170 + 0.221965I$ $b = -0.815188 + 0.630532I$	$-7.55907 + 1.70238I$	$-7.27343 - 3.59367I$
$u = -0.132324 - 1.358820I$ $a = 0.07650 - 1.87317I$ $b = 0.16530 - 3.22936I$	$-7.55907 + 1.70238I$	$-7.27343 - 3.59367I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.31944 + 1.42784I$ $a = 0.286545 + 0.562334I$ $b = -0.176253 + 1.206940I$	$-4.28217 - 5.80165I$	$-2.59768 + 6.29733I$
$u = -0.31944 + 1.42784I$ $a = 0.13016 - 1.68353I$ $b = 0.18891 - 2.61278I$	$-4.28217 - 5.80165I$	$-2.59768 + 6.29733I$
$u = -0.31944 - 1.42784I$ $a = 0.286545 - 0.562334I$ $b = -0.176253 - 1.206940I$	$-4.28217 + 5.80165I$	$-2.59768 - 6.29733I$
$u = -0.31944 - 1.42784I$ $a = 0.13016 + 1.68353I$ $b = 0.18891 + 2.61278I$	$-4.28217 + 5.80165I$	$-2.59768 - 6.29733I$
$u = 0.523959 + 0.054315I$ $a = 1.90743 - 1.36602I$ $b = 0.986066 + 0.652053I$	$6.73749 + 3.81968I$	$1.95892 - 3.35628I$
$u = 0.523959 + 0.054315I$ $a = -2.25261 - 1.67330I$ $b = -0.855397 + 0.372276I$	$6.73749 + 3.81968I$	$1.95892 - 3.35628I$
$u = 0.523959 - 0.054315I$ $a = 1.90743 + 1.36602I$ $b = 0.986066 - 0.652053I$	$6.73749 - 3.81968I$	$1.95892 + 3.35628I$
$u = 0.523959 - 0.054315I$ $a = -2.25261 + 1.67330I$ $b = -0.855397 - 0.372276I$	$6.73749 - 3.81968I$	$1.95892 + 3.35628I$
$u = -0.23365 + 1.55973I$ $a = -0.266571 + 1.360880I$ $b = -0.73106 + 2.22334I$	$-6.94898 - 6.84809I$	$-12.0162 + 9.7020I$
$u = -0.23365 + 1.55973I$ $a = -0.43195 - 1.69334I$ $b = -0.20577 - 2.36976I$	$-6.94898 - 6.84809I$	$-12.0162 + 9.7020I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.23365-1.55973I$ $a=-0.266571-1.360880I$ $b=-0.73106-2.22334I$	$-6.94898+6.84809I$	$-12.0162-9.7020I$
$u=-0.23365-1.55973I$ $a=-0.43195+1.69334I$ $b=-0.20577+2.36976I$	$-6.94898+6.84809I$	$-12.0162-9.7020I$
$u=-0.332972$ $a=-0.266953$ $b=-1.49504$	-3.02943	9.71400
$u=-0.332972$ $a=-5.03314$ $b=-0.134225$	-3.02943	9.71400

III.

$$\boldsymbol{I^u_3 = \langle -u^{11} - 4u^{10} + \cdots + b - 2,\ 2u^{12} + 3u^{11} + \cdots + 5a - 4,\ u^{13} + 4u^{12} + \cdots + 18u + 5\rangle}$$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -\frac{2}{5}u^{12} - \frac{3}{5}u^{11} + \cdots + \frac{28}{5}u + \frac{4}{5} \\ u^{11} + 4u^{10} + \cdots + 8u + 2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{2}{5}u^{12} - \frac{3}{5}u^{11} + \cdots - \frac{12}{5}u - \frac{11}{5} \\ u^{11} + 5u^{10} + \cdots + 8u + 2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{4}{5}u^{12} + \frac{11}{5}u^{11} + \cdots + \frac{14}{5}u + \frac{7}{5} \\ -u^{11} - 4u^{10} + \cdots - 12u - 4 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{1}{5}u^{12} - \frac{4}{5}u^{11} + \cdots - \frac{36}{5}u - \frac{8}{5} \\ -u^{12} - 4u^{11} + \cdots - 14u - 4 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{3}{5}u^{12} + \frac{12}{5}u^{11} + \cdots + \frac{58}{5}u + \frac{14}{5} \\ u^{12} + 4u^{11} + \cdots + 8u + 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{5}u^{12} - \frac{4}{5}u^{11} + \cdots - \frac{36}{5}u - \frac{8}{5} \\ -u^{12} - 4u^{11} + \cdots - 13u - 4 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{5}u^{12} - \frac{4}{5}u^{11} + \cdots - \frac{11}{5}u + \frac{2}{5} \\ -u^7 - 2u^6 - 4u^5 - 4u^4 - 2u^3 + 2u + 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= 4u^{12} + 12u^{11} + 41u^{10} + 76u^9 + 135u^8 + 174u^7 + 202u^6 + 192u^5 + 158u^4 + 106u^3 + 63u^2 + 27u + 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^{13} - 3u^{11} + \cdots - 5u + 1$
c_2	$u^{13} + 8u^{12} + \cdots + 3u + 1$
c_4	$u^{13} - u^{12} + \cdots + 2u - 1$
c_5	$u^{13} - 8u^{12} + \cdots + 3u - 1$
c_6	$u^{13} - u^{12} + \cdots - u + 1$
c_7	$u^{13} - 3u^{11} + \cdots - 5u - 1$
c_8, c_9	$u^{13} + 4u^{12} + \cdots + 18u + 5$
c_{10}	$u^{13} + u^{12} + \cdots + 2u + 1$
c_{11}	$u^{13} + u^{12} + \cdots - u - 1$
c_{12}	$u^{13} - 4u^{12} + \cdots + 18u - 5$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_7	$y^{13} - 6y^{12} + \cdots + 5y - 1$
c_2, c_5	$y^{13} - 8y^{12} + \cdots - 7y - 1$
c_4, c_{10}	$y^{13} - 7y^{12} + \cdots + 8y - 1$
c_6, c_{11}	$y^{13} + 13y^{12} + \cdots + 3y - 1$
c_8, c_9, c_{12}	$y^{13} + 12y^{12} + \cdots - 86y - 25$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.870086+0.472668I$ $a=\ \ 0.562228+0.256963I$ $b=\ \ 0.058997-0.395621I$	$0.72518-2.27010I$	$-3.32570+6.32204I$
$u=-0.870086-0.472668I$ $a=\ \ 0.562228-0.256963I$ $b=\ \ 0.058997+0.395621I$	$0.72518+2.27010I$	$-3.32570-6.32204I$
$u=\ \ 0.188480+1.095940I$ $a=\ \ 0.015018+1.370830I$ $b=-0.89332+1.36698I$	$3.78493+4.55783I$	$-2.53815-3.04000I$
$u=\ \ 0.188480-1.095940I$ $a=\ \ 0.015018-1.370830I$ $b=-0.89332-1.36698I$	$3.78493-4.55783I$	$-2.53815+3.04000I$
$u=\ \ 0.201492+0.859165I$ $a=-0.371227-1.303860I$ $b=\ \ 0.659133-1.181080I$	$4.68144-3.00710I$	$-1.90498+2.28394I$
$u=\ \ 0.201492-0.859165I$ $a=-0.371227+1.303860I$ $b=\ \ 0.659133+1.181080I$	$4.68144+3.00710I$	$-1.90498-2.28394I$
$u=-0.544012+1.038490I$ $a=-0.075020-0.146685I$ $b=-0.404699-0.503620I$	$-0.91635-2.84840I$	$-12.09656+1.44482I$
$u=-0.544012-1.038490I$ $a=-0.075020+0.146685I$ $b=-0.404699+0.503620I$	$-0.91635+2.84840I$	$-12.09656-1.44482I$
$u=-0.758405$ $a=-1.58340$ $b=\ \ 0.355204$	-7.22673	5.56510
$u=-0.32313+1.38540I$ $a=\ \ 0.602248+1.222900I$ $b=\ \ 0.65830+2.32161I$	$-11.73130-3.93288I$	$-6.70847+7.41271I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.32313 - 1.38540I$ $a = 0.602248 - 1.222900I$ $b = 0.65830 - 2.32161I$	$-11.73130 + 3.93288I$	$-6.70847 - 7.41271I$
$u = -0.27355 + 1.56061I$ $a = -0.041547 - 1.376770I$ $b = 0.24399 - 2.09573I$	$-6.09001 - 6.43621I$	$-3.20871 + 5.54804I$
$u = -0.27355 - 1.56061I$ $a = -0.041547 + 1.376770I$ $b = 0.24399 + 2.09573I$	$-6.09001 + 6.43621I$	$-3.20871 - 5.54804I$

IV. $I_4^u = \langle au + 3b - 4a + u - 1,\ 2a^2 + au + 2a + 4u + 3,\ u^2 + 2\rangle$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a \\ -\frac{1}{3}au + \frac{4}{3}a - \frac{1}{3}u + \frac{1}{3} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1}{3}au + \frac{1}{3}a - \frac{1}{3}u + \frac{1}{3} \\ -au - u + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{1}{3}au + \frac{1}{3}a - \frac{5}{6}u + \frac{1}{3} \\ -\frac{2}{3}au + \frac{2}{3}a - \frac{5}{3}u - \frac{1}{3} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} \frac{1}{2}u \\ -\frac{1}{3}au - \frac{2}{3}a + \frac{2}{3}u + \frac{4}{3} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1 \\ -2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -\frac{1}{3}au + \frac{1}{3}a - \frac{1}{3}u + \frac{1}{3} \\ -au - u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{1}{2}u \\ -\frac{1}{3}au - \frac{2}{3}a - \frac{1}{3}u + \frac{4}{3} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{2}u \\ \frac{1}{3}au + \frac{2}{3}a + \frac{1}{3}u - \frac{4}{3} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_7, c_{10}	$y^4 - 6y^3 + 15y^2 - 10y + 9$
c_2, c_5, c_6 c_{11}	$(y-1)^4$
c_8, c_9, c_{12}	$(y+2)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.414210I$ $a = -1.35328 + 1.09665I$ $b = -0.95408 + 1.62874I$	-8.22467	-12.0000
$u = 1.414210I$ $a = 0.35328 - 1.80376I$ $b = -0.04592 - 3.04296I$	-8.22467	-12.0000
$u = -1.414210I$ $a = -1.35328 - 1.09665I$ $b = -0.95408 - 1.62874I$	-8.22467	-12.0000
$u = -1.414210I$ $a = 0.35328 + 1.80376I$ $b = -0.04592 + 3.04296I$	-8.22467	-12.0000

V. $I_1^v = \langle a,\ b - v + 2,\ v^2 - 3v + 1\rangle$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0 \\ v-2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} v-2 \\ v-2 \end{pmatrix}$$

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

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

$$a_6 = \begin{pmatrix} -2 \\ v-3 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} v-2 \\ v-2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} v-2 \\ v-3 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} v-2 \\ v-3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -22$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_7, c_{10}	$y^2 - 3y + 1$
c_2, c_5, c_6 c_{11}	$(y-1)^2$
c_8, c_9, c_{12}	y^2

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.381966$ $a = 0$ $b = -1.61803$	-3.28987	-22.0000
$v = 2.61803$ $a = 0$ $b = 0.618034$	-3.28987	-22.0000

VI. $I_2^v = \langle a,\ b+1,\ v-1 \rangle$

(i) Arc colorings

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

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

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

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

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

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 1.00000$ $a = 0$ $b = -1.00000$	-1.64493	-6.00000

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_3	$(u+1)(u^2-u-1)(u^4-2u^3+\cdots+2u+3)(u^{13}-3u^{11}+\cdots-5u+1)$ $\cdot(u^{27}-u^{26}+\cdots+10u-1)(u^{34}+2u^{33}+\cdots+51u-23)$
c_2	$u(u-1)^6(u^{13}+8u^{12}+\cdots+3u+1)(u^{17}-4u^{16}+\cdots-4u+1)^2$ $\cdot(u^{27}+11u^{26}+\cdots-78u-9)$
c_4	$(u+1)(u^2-u-1)(u^4+2u^3+\cdots-2u+3)(u^{13}-u^{12}+\cdots+2u-1)$ $\cdot(u^{27}-2u^{26}+\cdots+u+1)(u^{34}-15u^{32}+\cdots-37u+61)$
c_5	$u(u+1)^6(u^{13}-8u^{12}+\cdots+3u-1)(u^{17}-4u^{16}+\cdots-4u+1)^2$ $\cdot(u^{27}+11u^{26}+\cdots-78u-9)$
c_6	$((u-1)^2)(u+1)^5(u^{13}-u^{12}+\cdots-u+1)(u^{27}-2u^{26}+\cdots+4u+3)$ $\cdot(u^{34}+3u^{33}+\cdots-682u-121)$
c_7	$(u+1)(u^2+u-1)(u^4+2u^3+\cdots-2u+3)(u^{13}-3u^{11}+\cdots-5u-1)$ $\cdot(u^{27}-u^{26}+\cdots+10u-1)(u^{34}+2u^{33}+\cdots+51u-23)$
c_8, c_9	$u^3(u^2+2)^2(u^{13}+4u^{12}+\cdots+18u+5)(u^{17}-3u^{16}+\cdots+6u-2)^2$ $\cdot(u^{27}+7u^{26}+\cdots+69u+9)$
c_{10}	$(u+1)(u^2+u-1)(u^4-2u^3+\cdots+2u+3)(u^{13}+u^{12}+\cdots+2u+1)$ $\cdot(u^{27}-2u^{26}+\cdots+u+1)(u^{34}-15u^{32}+\cdots-37u+61)$
c_{11}	$((u-1)^4)(u+1)^3(u^{13}+u^{12}+\cdots-u-1)(u^{27}-2u^{26}+\cdots+4u+3)$ $\cdot(u^{34}+3u^{33}+\cdots-682u-121)$
c_{12}	$u^3(u^2+2)^2(u^{13}-4u^{12}+\cdots+18u-5)(u^{17}-3u^{16}+\cdots+6u-2)^2$ $\cdot(u^{27}+7u^{26}+\cdots+69u+9)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_7	$(y-1)(y^2-3y+1)(y^4-6y^3+\cdots-10y+9)(y^{13}-6y^{12}+\cdots+5y-1)$ $\cdot(y^{27}-25y^{26}+\cdots+26y-1)(y^{34}-6y^{33}+\cdots-7293y+529)$
c_2, c_5	$y(y-1)^6(y^{13}-8y^{12}+\cdots-7y-1)(y^{17}-2y^{16}+\cdots-4y-1)^2$ $\cdot(y^{27}-7y^{26}+\cdots-54y-81)$
c_4, c_{10}	$(y-1)(y^2-3y+1)(y^4-6y^3+\cdots-10y+9)(y^{13}-7y^{12}+\cdots+8y-1)$ $\cdot(y^{27}-22y^{26}+\cdots+29y-1)(y^{34}-30y^{33}+\cdots-156553y+3721)$
c_6, c_{11}	$((y-1)^7)(y^{13}+13y^{12}+\cdots+3y-1)(y^{27}+22y^{26}+\cdots+124y-9)$ $\cdot(y^{34}+29y^{33}+\cdots+783838y+14641)$
c_8, c_9, c_{12}	$y^3(y+2)^4(y^{13}+12y^{12}+\cdots-86y-25)$ $\cdot((y^{17}+17y^{16}+\cdots+52y-4)^2)(y^{27}+25y^{26}+\cdots-1917y-81)$