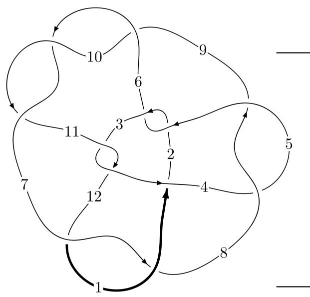
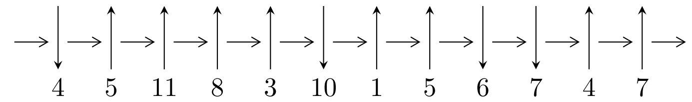
$12n_{0829}$ ($K12n_{0829}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -246065u^{16} - 4244217u^{15} + \cdots + 5347744b - 62370976, \\
& -1456963u^{16} - 16357645u^{15} + \cdots + 10695488a - 33380064,\ u^{17} + 13u^{16} + \cdots + 384u + 64\rangle \\
I_2^u = \langle & 32u^{21}a + 3841u^{21} + \cdots + 32a + 7087,\ -4960u^{21}a - 3211u^{21} + \cdots - 9433a - 7311, \\
& u^{22} - 5u^{21} + \cdots + 9u - 1\rangle \\
I_3^u = \langle & -395u^7 + 1362u^6 - 2821u^5 + 528u^4 + 4313u^3 - 6033u^2 + 499b + 2843u + 219, \\
& 176u^7 - 881u^6 + 2212u^5 - 2254u^4 - 1376u^3 + 5528u^2 + 499a - 5591u + 2405, \\
& u^8 - 4u^7 + 9u^6 - 5u^5 - 11u^4 + 22u^3 - 15u^2 + u + 1\rangle \\
I_4^u = \langle & u^3a + 2u^2a + u^3 - au + 2u^2 + b + a + 1,\ -u^2a + 2u^3 + a^2 - au + 6u^2 + 2a + 2u - 3,\ u^4 + 3u^3 + u^2 - u +
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 77 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. $\boldsymbol{I_1^u =}$
$\boldsymbol{\langle -2.46\times10^5u^{16} - 4.24\times10^6u^{15} + \cdots + 5.35\times10^6b - 6.24\times10^7,\ -1.46\times10^6u^{16} - 1.64\times10^7u^{15} + \cdots + 1.07\times10^7a - 3.34\times10^7,\ u^{17} + 13u^{16} + \cdots + 384u + 64\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.136222u^{16} + 1.52940u^{15} + \cdots + 24.6566u + 3.12095 \\ 0.0460129u^{16} + 0.793646u^{15} + \cdots + 55.1943u + 11.6630 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.182235u^{16} + 2.32304u^{15} + \cdots + 79.8509u + 14.7840 \\ 0.0460129u^{16} + 0.793646u^{15} + \cdots + 55.1943u + 11.6630 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.0357957u^{16} + 0.746991u^{15} + \cdots + 66.8882u + 12.8825 \\ -0.281648u^{16} - 3.00567u^{15} + \cdots + 1.86308u + 2.29092 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.317443u^{16} - 3.75266u^{15} + \cdots - 66.0251u - 9.59153 \\ 0.281648u^{16} + 3.00567u^{15} + \cdots - 0.863078u - 2.29092 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.317443u^{16} - 3.75266u^{15} + \cdots - 66.0251u - 9.59153 \\ -0.00420439u^{16} - 0.702547u^{15} + \cdots - 124.203u - 26.2336 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.0865400u^{16} - 1.32604u^{15} + \cdots - 66.0553u - 12.4275 \\ 0.486877u^{16} + 5.63364u^{15} + \cdots + 103.536u + 18.4041 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.199312u^{16} - 2.38217u^{15} + \cdots - 56.2845u - 9.51523 \\ 0.201025u^{16} + 1.92542u^{15} + \cdots - 20.8039u - 5.53856 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.519547u^{16} - 5.47455u^{15} + \cdots - 26.4448u - 3.93239 \\ -0.869649u^{16} - 9.93344u^{15} + \cdots - 149.357u - 26.0336 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.866357u^{16} + 10.0713u^{15} + \cdots + 194.012u + 35.2369 \\ 0.995891u^{16} + 11.9801u^{15} + \cdots + 303.450u + 58.3917 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{2547627}{668468}u^{16} + \frac{7779965}{167117}u^{15} + \cdots + \frac{235542904}{167117}u + \frac{48416750}{167117}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{17} - 13u^{16} + \cdots + 384u - 64$
c_2, c_3, c_5 c_{11}	$u^{17} - u^{16} + \cdots + 2u^2 - 1$
c_4, c_7, c_8 c_{12}	$u^{17} - u^{16} + \cdots + 2u - 1$
c_6, c_9, c_{10}	$u^{17} + 7u^{16} + \cdots + 20u - 8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{17} + y^{16} + \cdots + 30720y - 4096$
c_2, c_3, c_5 c_{11}	$y^{17} - y^{16} + \cdots + 4y - 1$
c_4, c_7, c_8 c_{12}	$y^{17} - 7y^{16} + \cdots + 16y - 1$
c_6, c_9, c_{10}	$y^{17} - 15y^{16} + \cdots + 656y - 64$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.821682 + 0.661529I$ $a = \quad 0.858008 - 0.324711I$ $b = -0.989677 - 1.007790I$	$1.25631 + 4.00228I$	$15.8604 - 12.7835I$
$u = -0.821682 - 0.661529I$ $a = \quad 0.858008 + 0.324711I$ $b = -0.989677 + 1.007790I$	$1.25631 - 4.00228I$	$15.8604 + 12.7835I$
$u = -1.273470 + 0.500020I$ $a = \quad 0.320002 - 0.094697I$ $b = -0.735208 - 0.318195I$	$0.477935 + 0.416349I$	$7.46863 - 3.27578I$
$u = -1.273470 - 0.500020I$ $a = \quad 0.320002 + 0.094697I$ $b = -0.735208 + 0.318195I$	$0.477935 - 0.416349I$	$7.46863 + 3.27578I$
$u = \quad 0.481738 + 0.363033I$ $a = -1.89001 - 0.31567I$ $b = \quad 0.637466 + 0.409508I$	$-2.69267 - 1.50320I$	$2.85189 - 0.23851I$
$u = \quad 0.481738 - 0.363033I$ $a = -1.89001 + 0.31567I$ $b = \quad 0.637466 - 0.409508I$	$-2.69267 + 1.50320I$	$2.85189 + 0.23851I$
$u = -1.43589 + 0.34815I$ $a = -0.485149 - 0.179593I$ $b = \quad 0.963753 + 0.973871I$	$-9.11607 - 1.06104I$	$0.674423 + 0.423791I$
$u = -1.43589 - 0.34815I$ $a = -0.485149 + 0.179593I$ $b = \quad 0.963753 - 0.973871I$	$-9.11607 + 1.06104I$	$0.674423 - 0.423791I$
$u = -0.460839$ $a = -0.546480$ $b = -0.467095$	0.909383	10.8830
$u = -0.57733 + 1.43334I$ $a = -0.549979 + 0.431459I$ $b = \quad 0.722818 + 0.003213I$	$2.52580 - 2.40829I$	$11.92661 + 4.20411I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.57733-1.43334I$ $a=-0.549979-0.431459I$ $b=\ \ 0.722818-0.003213I$	$2.52580+2.40829I$	$11.92661-4.20411I$
$u=-1.22826+1.00153I$ $a=-0.948109+0.039576I$ $b=\ \ 1.19077+0.85178I$	$0.70626+10.80100I$	$6.42876-9.21869I$
$u=-1.22826-1.00153I$ $a=-0.948109-0.039576I$ $b=\ \ 1.19077-0.85178I$	$0.70626-10.80100I$	$6.42876+9.21869I$
$u=-1.49701+1.03785I$ $a=\ \ 0.972748+0.053873I$ $b=-1.29563-0.83652I$	$-6.6188+15.4900I$	$3.66741-7.95091I$
$u=-1.49701-1.03785I$ $a=\ \ 0.972748-0.053873I$ $b=-1.29563+0.83652I$	$-6.6188-15.4900I$	$3.66741+7.95091I$
$u=\ \ 0.08233+2.05216I$ $a=\ \ 0.745729-0.432687I$ $b=-0.760744+0.061381I$	$-2.62034-5.47573I$	$5.18020+4.38632I$
$u=\ \ 0.08233-2.05216I$ $a=\ \ 0.745729+0.432687I$ $b=-0.760744-0.061381I$	$-2.62034+5.47573I$	$5.18020-4.38632I$

II. $\boldsymbol{I_2^u = \langle 32u^{21}a + 3841u^{21} + \cdots + 32a + 7087,\ -4960u^{21}a - 3211u^{21} + \cdots - 9433a - 7311,\ u^{22} - 5u^{21} + \cdots + 9u - 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ -u^{21}a - \frac{3841}{32}u^{21} + \cdots - a - \frac{7087}{32} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -au^{21} - 120.031u^{21} + \cdots + 1578.41u - 221.469 \\ -u^{21}a - \frac{3841}{32}u^{21} + \cdots - a - \frac{7087}{32} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 120.031au^{21} + 101.344u^{21} + \cdots + 221.469a + 227.469 \\ 19.8750u^{21} - 90.5313u^{20} + \cdots - 300.563u + 45.6563 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 66.4688au^{21} + 81.4688u^{21} + \cdots + 120.031a + 182.813 \\ -66.4688au^{21} - 35.8125u^{21} + \cdots - 120.031a - 72.4688 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 66.4688au^{21} + 81.4688u^{21} + \cdots + 120.031a + 182.813 \\ -44.8125au^{21} - 18.8750u^{21} + \cdots - 82.4688a - 35.6563 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 137.563au^{21} + 189.281u^{21} + \cdots + 248.500a + 339.156 \\ -34.1875au^{21} - 35.8125u^{21} + \cdots - 62.0625a - 81.4688 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 42.0625au^{21} + 81.4688u^{21} + \cdots + 81.6250a + 182.813 \\ -\frac{151}{2}u^{21}a - 101u^{21} + \cdots - \frac{2201}{16}a - \frac{6057}{32} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -10.4375au^{21} - 244.844u^{21} + \cdots - 17.5313a - 470.813 \\ 69.5000au^{21} + 141.500u^{21} + \cdots + 129.875a + 259.594 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -17.8750au^{21} - 248.500u^{21} + \cdots - 35.6563a - 441.625 \\ 16.9375au^{21} + 182.094u^{21} + \cdots + 36.8125a + 332.406 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{413}{8}u^{21} - 237u^{20} + \cdots - \frac{3409}{4}u + \frac{547}{4}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{22} + 5u^{21} + \cdots - 9u - 1)^2$
c_2, c_3, c_5 c_{11}	$u^{44} - u^{43} + \cdots - 13u + 1$
c_4, c_7, c_8 c_{12}	$u^{44} - 8u^{42} + \cdots + 147u - 43$
c_6, c_9, c_{10}	$(u^{22} - 2u^{21} + \cdots + 7u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{22} - 13y^{21} + \cdots - 27y + 1)^2$
c_2, c_3, c_5 c_{11}	$y^{44} - 11y^{43} + \cdots - 477y + 1$
c_4, c_7, c_8 c_{12}	$y^{44} - 16y^{43} + \cdots - 36831y + 1849$
c_6, c_9, c_{10}	$(y^{22} - 26y^{21} + \cdots - 71y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.866708 + 0.250342I$ $a = 1.183400 - 0.008528I$ $b = -0.476875 + 1.290100I$	$-9.17169 + 8.01141I$	$0.77261 - 5.09216I$
$u = -0.866708 + 0.250342I$ $a = -1.83786 + 0.29332I$ $b = 0.933182 + 0.933872I$	$-9.17169 + 8.01141I$	$0.77261 - 5.09216I$
$u = -0.866708 - 0.250342I$ $a = 1.183400 + 0.008528I$ $b = -0.476875 - 1.290100I$	$-9.17169 - 8.01141I$	$0.77261 + 5.09216I$
$u = -0.866708 - 0.250342I$ $a = -1.83786 - 0.29332I$ $b = 0.933182 - 0.933872I$	$-9.17169 - 8.01141I$	$0.77261 + 5.09216I$
$u = 0.448775 + 1.039170I$ $a = 0.803496 - 0.223199I$ $b = -0.952390 + 0.757775I$	$2.09525 - 2.66729I$	$11.12772 + 3.46430I$
$u = 0.448775 + 1.039170I$ $a = -0.903341 - 0.952671I$ $b = 0.622333 - 0.085179I$	$2.09525 - 2.66729I$	$11.12772 + 3.46430I$
$u = 0.448775 - 1.039170I$ $a = 0.803496 + 0.223199I$ $b = -0.952390 - 0.757775I$	$2.09525 + 2.66729I$	$11.12772 - 3.46430I$
$u = 0.448775 - 1.039170I$ $a = -0.903341 + 0.952671I$ $b = 0.622333 + 0.085179I$	$2.09525 + 2.66729I$	$11.12772 - 3.46430I$
$u = 0.863512$ $a = -1.183500 + 0.111611I$ $b = 0.548411 + 0.706122I$	-2.52443	-0.931330
$u = 0.863512$ $a = -1.183500 - 0.111611I$ $b = 0.548411 - 0.706122I$	-2.52443	-0.931330

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.16022$ $a = 0.887279 + 0.151896I$ $b = -0.476544 - 1.099920I$	-10.3363	-0.820860
$u = 1.16022$ $a = 0.887279 - 0.151896I$ $b = -0.476544 + 1.099920I$	-10.3363	-0.820860
$u = -0.591232 + 0.256780I$ $a = -0.908291 - 0.264537I$ $b = 0.526540 - 1.241070I$	$-1.23360 + 3.53973I$	$1.05003 - 10.50470I$
$u = -0.591232 + 0.256780I$ $a = 2.12856 - 0.64846I$ $b = -0.612313 - 0.792137I$	$-1.23360 + 3.53973I$	$1.05003 - 10.50470I$
$u = -0.591232 - 0.256780I$ $a = -0.908291 + 0.264537I$ $b = 0.526540 + 1.241070I$	$-1.23360 - 3.53973I$	$1.05003 + 10.50470I$
$u = -0.591232 - 0.256780I$ $a = 2.12856 + 0.64846I$ $b = -0.612313 + 0.792137I$	$-1.23360 - 3.53973I$	$1.05003 + 10.50470I$
$u = 0.585465$ $a = 2.26814 + 0.49491I$ $b = -0.837555 + 0.698988I$	-0.922805	4.16100
$u = 0.585465$ $a = 2.26814 - 0.49491I$ $b = -0.837555 - 0.698988I$	-0.922805	4.16100
$u = 0.535304$ $a = -2.86365 + 0.78400I$ $b = 0.998448 + 0.903122I$	-7.30978	2.04140
$u = 0.535304$ $a = -2.86365 - 0.78400I$ $b = 0.998448 - 0.903122I$	-7.30978	2.04140

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.51859$ $a = 0.681101$ $b = -1.42335$	1.54711	5.39830
$u = -1.51859$ $a = 0.189885$ $b = -1.12717$	1.54711	5.39830
$u = 0.317611 + 0.260825I$ $a = -0.396815 + 0.768799I$ $b = 1.43814 - 0.60489I$	$-2.28815 + 2.08884I$	$-3.87328 + 3.78041I$
$u = 0.317611 + 0.260825I$ $a = -1.48222 + 3.68188I$ $b = -0.287986 - 0.323663I$	$-2.28815 + 2.08884I$	$-3.87328 + 3.78041I$
$u = 0.317611 - 0.260825I$ $a = -0.396815 - 0.768799I$ $b = 1.43814 + 0.60489I$	$-2.28815 - 2.08884I$	$-3.87328 - 3.78041I$
$u = 0.317611 - 0.260825I$ $a = -1.48222 - 3.68188I$ $b = -0.287986 + 0.323663I$	$-2.28815 - 2.08884I$	$-3.87328 - 3.78041I$
$u = -1.60563$ $a = -1.02334$ $b = 1.47101$	7.19906	28.3950
$u = -1.60563$ $a = 0.197362$ $b = 0.718798$	7.19906	28.3950
$u = 0.310033$ $a = -1.94784$ $b = -1.50623$	8.52642	8.54640
$u = 0.310033$ $a = 3.78741$ $b = 1.07088$	8.52642	8.54640

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.36454 + 1.01089I$ $a = -0.945795 + 0.016302I$ $b = 1.122230 - 0.633333I$	$-0.81248 - 5.23931I$	$4.00000 + 6.82590I$
$u = 1.36454 + 1.01089I$ $a = 0.555505 + 0.029436I$ $b = -0.864498 + 0.663611I$	$-0.81248 - 5.23931I$	$4.00000 + 6.82590I$
$u = 1.36454 - 1.01089I$ $a = -0.945795 - 0.016302I$ $b = 1.122230 + 0.633333I$	$-0.81248 + 5.23931I$	$4.00000 - 6.82590I$
$u = 1.36454 - 1.01089I$ $a = 0.555505 - 0.029436I$ $b = -0.864498 - 0.663611I$	$-0.81248 + 5.23931I$	$4.00000 - 6.82590I$
$u = 1.53118 + 0.76829I$ $a = 1.087270 - 0.024762I$ $b = -1.29688 + 0.72319I$	$-7.71608 - 6.66224I$	$1.97271 + 4.67525I$
$u = 1.53118 + 0.76829I$ $a = -0.370249 + 0.191551I$ $b = 0.857555 - 0.908378I$	$-7.71608 - 6.66224I$	$1.97271 + 4.67525I$
$u = 1.53118 - 0.76829I$ $a = 1.087270 + 0.024762I$ $b = -1.29688 - 0.72319I$	$-7.71608 + 6.66224I$	$1.97271 - 4.67525I$
$u = 1.53118 - 0.76829I$ $a = -0.370249 - 0.191551I$ $b = 0.857555 + 0.908378I$	$-7.71608 + 6.66224I$	$1.97271 - 4.67525I$
$u = -1.79379$ $a = 1.21437$ $b = -1.39851$	3.11718	0.680620
$u = -1.79379$ $a = -0.449330$ $b = -0.330312$	3.11718	0.680620

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.02757 + 1.65415I$ $a = 0.960232 + 0.372670I$ $b = -0.946643 + 0.220537I$	$-1.90562 - 6.12300I$	0
$u = 1.02757 + 1.65415I$ $a = -0.806975 + 0.159347I$ $b = 0.967291 - 0.632040I$	$-1.90562 - 6.12300I$	0
$u = 1.02757 - 1.65415I$ $a = 0.960232 - 0.372670I$ $b = -0.946643 - 0.220537I$	$-1.90562 + 6.12300I$	0
$u = 1.02757 - 1.65415I$ $a = -0.806975 - 0.159347I$ $b = 0.967291 + 0.632040I$	$-1.90562 + 6.12300I$	0

III. $\boldsymbol{I_3^u = \langle -395u^7 + 1362u^6 + \cdots + 499b + 219,\ 176u^7 - 881u^6 + \cdots + 499a + 2405,\ u^8 - 4u^7 + \cdots + u + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_7 = \begin{pmatrix} -0.352705u^7 + 1.76553u^6 + \cdots + 11.2044u - 4.81964 \\ 0.791583u^7 - 2.72946u^6 + \cdots - 5.69739u - 0.438878 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.438878u^7 - 0.963928u^6 + \cdots + 5.50701u - 5.25852 \\ 0.791583u^7 - 2.72946u^6 + \cdots - 5.69739u - 0.438878 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1.80561u^7 + 7.18036u^6 + \cdots + 24.5351u - 1.29259 \\ -0.0420842u^7 + 0.352705u^6 + \cdots + 1.51303u + 1.80561 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -1.76353u^7 + 6.82766u^6 + \cdots + 24.0220u - 2.09820 \\ -0.0420842u^7 + 0.352705u^6 + \cdots + 0.513026u + 1.80561 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1.76353u^7 + 6.82766u^6 + \cdots + 24.0220u - 2.09820 \\ -0.240481u^7 + 1.15832u^6 + \cdots + 2.50301u + 2.03206 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 2.76353u^7 - 10.8277u^6 + \cdots - 39.0220u + 4.09820 \\ 0.424850u^7 - 1.51303u^6 + \cdots - 1.65531u - 2.98998 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -2.50902u^7 + 10.2184u^6 + \cdots + 42.6814u - 7.39880 \\ -0.226453u^7 + 0.707415u^6 + \cdots - 1.33467u + 2.76353 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 2.49499u^7 - 9.76754u^6 + \cdots - 38.8437u + 6.66733 \\ 0.621242u^7 - 1.82565u^6 + \cdots + 0.617234u - 2.74950 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.250501u^7 + 0.623246u^6 + \cdots - 2.18437u + 3.36673 \\ -0.815631u^7 + 2.64529u^6 + \cdots + 4.84770u + 1.04208 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= -\frac{1250}{499}u^7 + \frac{4607}{499}u^6 - \frac{9382}{499}u^5 + \frac{2252}{499}u^4 + \frac{16668}{499}u^3 - \frac{20753}{499}u^2 + \frac{10557}{499}u + \frac{6321}{499}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8 - 4u^7 + 9u^6 - 5u^5 - 11u^4 + 22u^3 - 15u^2 + u + 1$
c_2, c_{11}	$u^8 - u^7 - 2u^6 - u^5 + 2u^4 + 4u^3 - u - 1$
c_3, c_5	$u^8 + u^7 - 2u^6 + u^5 + 2u^4 - 4u^3 + u - 1$
c_4, c_7	$u^8 + u^7 - 3u^6 - 3u^5 + 3u^4 + 4u^3 - 2u^2 - 3u + 1$
c_6	$u^8 + 2u^7 - 2u^6 - 5u^5 - u^4 + u^3 + 3u^2 + 3u - 1$
c_8, c_{12}	$u^8 - u^7 - 3u^6 + 3u^5 + 3u^4 - 4u^3 - 2u^2 + 3u + 1$
c_9, c_{10}	$u^8 - 2u^7 - 2u^6 + 5u^5 - u^4 - u^3 + 3u^2 - 3u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 + 2y^7 + 19y^6 - 77y^5 + 81y^4 - 126y^3 + 159y^2 - 31y + 1$
c_2, c_3, c_5 c_{11}	$y^8 - 5y^7 + 6y^6 - y^5 + 8y^4 - 14y^3 + 4y^2 - y + 1$
c_4, c_7, c_8 c_{12}	$y^8 - 7y^7 + 21y^6 - 39y^5 + 53y^4 - 52y^3 + 34y^2 - 13y + 1$
c_6, c_9, c_{10}	$y^8 - 8y^7 + 22y^6 - 19y^5 - 15y^4 + 27y^3 + 5y^2 - 15y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.735892 + 0.886577I$ $a = -0.884202 - 0.195074I$ $b = 0.813416 - 0.781160I$	$0.77106 - 3.72981I$	$3.13822 + 5.22830I$
$u = 0.735892 - 0.886577I$ $a = -0.884202 + 0.195074I$ $b = 0.813416 + 0.781160I$	$0.77106 + 3.72981I$	$3.13822 - 5.22830I$
$u = 1.18114$ $a = -0.233176$ $b = 1.52041$	2.49259	17.2730
$u = -1.34198$ $a = 0.549293$ $b = -0.314751$	-0.332482	-1.32110
$u = 0.430959$ $a = -1.72753$ $b = -1.30833$	9.63351	16.6630
$u = -0.200867$ $a = -7.53063$ $b = 1.25963$	5.93337	6.48310
$u = 1.22948 + 1.99454I$ $a = 0.855225 - 0.024290I$ $b = -0.891894 + 0.448855I$	$-3.05482 - 6.85115I$	$0.81307 + 9.87716I$
$u = 1.22948 - 1.99454I$ $a = 0.855225 + 0.024290I$ $b = -0.891894 - 0.448855I$	$-3.05482 + 6.85115I$	$0.81307 - 9.87716I$

IV. $\boldsymbol{I_4^u = \langle u^3a + 2u^2a + u^3 - au + 2u^2 + b + a + 1,\ -u^2a + 2u^3 + a^2 - au + 6u^2 + 2a + 2u - 3,\ u^4 + 3u^3 + u^2 - u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2u^3 + 6u^2 + 17u - 2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^4 - 7y^3 + 9y^2 + y + 1)^2$
c_2, c_3, c_5 c_{11}	$y^8 - 10y^7 + 35y^6 - 55y^5 + 45y^4 - 13y^3 - 8y^2 + 3y + 1$
c_4, c_7, c_8 c_{12}	$y^8 - 7y^7 + 23y^6 - 48y^5 + 63y^4 - 48y^3 + 23y^2 - 7y + 1$
c_6, c_9, c_{10}	$(y^4 - 5y^3 + 10y^2 - 8y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.38939$ $a=-1.03392$ $b=1.51044$	6.97792	-8.67300
$u=-1.38939$ $a=-0.425060$ $b=-0.662061$	6.97792	-8.67300
$u=0.339093+0.446630I$ $a=1.239660-0.452440I$ $b=-1.17507-0.80023I$	$-2.07364-2.52742I$	$3.58548+9.28015I$
$u=0.339093+0.446630I$ $a=-2.98506+1.20197I$ $b=0.581383-0.395925I$	$-2.07364-2.52742I$	$3.58548+9.28015I$
$u=0.339093-0.446630I$ $a=1.239660+0.452440I$ $b=-1.17507+0.80023I$	$-2.07364+2.52742I$	$3.58548-9.28015I$
$u=0.339093-0.446630I$ $a=-2.98506-1.20197I$ $b=0.581383+0.395925I$	$-2.07364+2.52742I$	$3.58548-9.28015I$
$u=-2.28879$ $a=1.06794$ $b=-1.38370$	3.74910	14.5020
$u=-2.28879$ $a=-0.118151$ $b=0.722703$	3.74910	14.5020

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^4+3u^3+u^2-u+1)^2$ $\cdot(u^8-4u^7+9u^6-5u^5-11u^4+22u^3-15u^2+u+1)$ $\cdot(u^{17}-13u^{16}+\cdots+384u-64)(u^{22}+5u^{21}+\cdots-9u-1)^2$
c_2, c_{11}	$(u^8-u^7-2u^6-u^5+2u^4+4u^3-u-1)$ $\cdot(u^8+4u^7+\cdots+u+1)(u^{17}-u^{16}+\cdots+2u^2-1)$ $\cdot(u^{44}-u^{43}+\cdots-13u+1)$
c_3, c_5	$(u^8-4u^7+3u^6+5u^5-7u^4+u^3+2u^2-u+1)$ $\cdot(u^8+u^7+\cdots+u-1)(u^{17}-u^{16}+\cdots+2u^2-1)$ $\cdot(u^{44}-u^{43}+\cdots-13u+1)$
c_4, c_7	$(u^8-u^7-3u^6+4u^5+3u^4-4u^3-3u^2+u+1)$ $\cdot(u^8+u^7-3u^6-3u^5+3u^4+4u^3-2u^2-3u+1)$ $\cdot(u^{17}-u^{16}+\cdots+2u-1)(u^{44}-8u^{42}+\cdots+147u-43)$
c_6	$(u^4-u^3-2u^2+2u+1)^2$ $\cdot(u^8+2u^7-2u^6-5u^5-u^4+u^3+3u^2+3u-1)$ $\cdot(u^{17}+7u^{16}+\cdots+20u-8)(u^{22}-2u^{21}+\cdots+7u+1)^2$
c_8, c_{12}	$(u^8-u^7-3u^6+3u^5+3u^4-4u^3-2u^2+3u+1)$ $\cdot(u^8+u^7+\cdots-u+1)(u^{17}-u^{16}+\cdots+2u-1)$ $\cdot(u^{44}-8u^{42}+\cdots+147u-43)$
c_9, c_{10}	$(u^4+u^3-2u^2-2u+1)^2$ $\cdot(u^8-2u^7-2u^6+5u^5-u^4-u^3+3u^2-3u-1)$ $\cdot(u^{17}+7u^{16}+\cdots+20u-8)(u^{22}-2u^{21}+\cdots+7u+1)^2$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^4 - 7y^3 + 9y^2 + y + 1)^2$ $\cdot (y^8 + 2y^7 + 19y^6 - 77y^5 + 81y^4 - 126y^3 + 159y^2 - 31y + 1)$ $\cdot (y^{17} + y^{16} + \cdots + 30720y - 4096)(y^{22} - 13y^{21} + \cdots - 27y + 1)^2$
c_2, c_3, c_5 c_{11}	$(y^8 - 10y^7 + 35y^6 - 55y^5 + 45y^4 - 13y^3 - 8y^2 + 3y + 1)$ $\cdot (y^8 - 5y^7 + 6y^6 - y^5 + 8y^4 - 14y^3 + 4y^2 - y + 1)$ $\cdot (y^{17} - y^{16} + \cdots + 4y - 1)(y^{44} - 11y^{43} + \cdots - 477y + 1)$
c_4, c_7, c_8 c_{12}	$(y^8 - 7y^7 + 21y^6 - 39y^5 + 53y^4 - 52y^3 + 34y^2 - 13y + 1)$ $\cdot (y^8 - 7y^7 + 23y^6 - 48y^5 + 63y^4 - 48y^3 + 23y^2 - 7y + 1)$ $\cdot (y^{17} - 7y^{16} + \cdots + 16y - 1)(y^{44} - 16y^{43} + \cdots - 36831y + 1849)$
c_6, c_9, c_{10}	$(y^4 - 5y^3 + 10y^2 - 8y + 1)^2$ $\cdot (y^8 - 8y^7 + 22y^6 - 19y^5 - 15y^4 + 27y^3 + 5y^2 - 15y + 1)$ $\cdot (y^{17} - 15y^{16} + \cdots + 656y - 64)(y^{22} - 26y^{21} + \cdots - 71y + 1)^2$