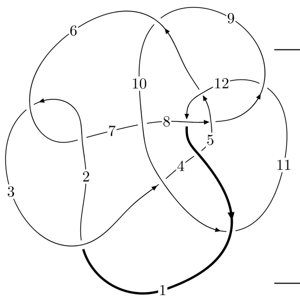
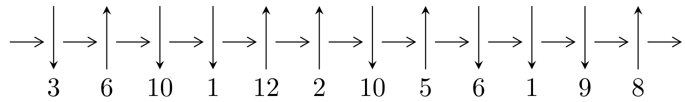
$12n_{0521}$ ($K12n_{0521}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 432917u^{27} + 3841573u^{26} + \cdots + 262964b + 2783376,$$
$$413130u^{27} + 3479001u^{26} + \cdots + 262964a + 1217429,\ u^{28} + 9u^{27} + \cdots + 124u + 16\rangle$$
$$I_2^u = \langle -87u^{16} + 385u^{15} + \cdots + 77b - 41,\ -190u^{16} + 693u^{15} + \cdots + 231a - 163,\ u^{17} - 4u^{16} + \cdots - 6u^2 - 1\rangle$$
$$I_3^u = \langle 343u^{10}a^3 + 5345u^{10}a^2 + \cdots + 5127a + 18129,\ u^{10}a^3 - 3u^{10}a^2 + \cdots + 26a + 1,$$
$$u^{11} - 2u^{10} + 6u^9 - 8u^8 + 12u^7 - 13u^6 + 12u^5 - 13u^4 + 9u^3 - 8u^2 + 4u - 1\rangle$$
$$I_4^u = \langle b - a + u,\ a^2 + a - u - 1,\ u^2 + u + 1\rangle$$
$$I_5^u = \langle b - a + 1,\ a^2 - au - a + 1,\ u^2 + u + 1\rangle$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 97 representations.

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[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. $\boldsymbol{I_1^u = \langle 4.33 \times 10^5 u^{27} + 3.84 \times 10^6 u^{26} + \cdots + 2.63 \times 10^5 b + 2.78 \times 10^6,\ 4.13 \times 10^5 u^{27} + 3.48 \times 10^6 u^{26} + \cdots + 2.63 \times 10^5 a + 1.22 \times 10^6,\ u^{28} + 9u^{27} + \cdots + 124u + 16\rangle}$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -1.57105u^{27} - 13.2300u^{26} + \cdots - 55.0012u - 4.62964 \\ -1.64630u^{27} - 14.6087u^{26} + \cdots - 102.538u - 10.5846 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.956809u^{27} + 9.01001u^{26} + \cdots + 2.45249u - 3.84208 \\ 1.67232u^{27} + 15.4625u^{26} + \cdots + 188.238u + 21.6886 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.715515u^{27} - 6.45245u^{26} + \cdots - 184.785u - 26.5307 \\ 0.687566u^{27} + 5.41127u^{26} + \cdots - 74.2301u - 11.6532 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^4 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.693057u^{27} - 6.09592u^{26} + \cdots + 30.7434u + 7.11420 \\ -2.14571u^{27} - 18.5603u^{26} + \cdots - 94.5924u - 9.92361 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1.57105u^{27} - 13.2300u^{26} + \cdots - 55.0012u - 4.62964 \\ -2.38308u^{27} - 20.2951u^{26} + \cdots - 14.8953u + 3.96757 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -1.33446u^{27} - 10.2494u^{26} + \cdots - 6.34518u + 1.73776 \\ 1.02850u^{27} + 9.08118u^{26} + \cdots + 212.265u + 31.6255 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 2.39557u^{27} + 20.4749u^{26} + \cdots + 148.520u + 18.4022 \\ 1.49590u^{27} + 15.8334u^{26} + \cdots + 111.117u + 8.74080 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{394167}{65741}u^{27} - \frac{3195674}{65741}u^{26} + \cdots - \frac{10576918}{65741}u - \frac{485930}{65741}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{28}+17u^{27}+\cdots+1360u+256$
c_2, c_6	$u^{28}-9u^{27}+\cdots-124u+16$
c_3, c_9	$u^{28}+u^{27}+\cdots+u+1$
c_4	$u^{28}-2u^{27}+\cdots-45u+25$
c_5, c_8	$u^{28}+u^{26}+\cdots+3u+1$
c_7, c_{10}	$u^{28}+u^{27}+\cdots+21u+1$
c_{11}	$u^{28}-28u^{27}+\cdots-50u+4$
c_{12}	$u^{28}-26u^{27}+\cdots-5120u+512$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{28} - 11y^{27} + \cdots + 264448y + 65536$
c_2, c_6	$y^{28} + 17y^{27} + \cdots + 1360y + 256$
c_3, c_9	$y^{28} - 31y^{27} + \cdots - 7y + 1$
c_4	$y^{28} - 16y^{27} + \cdots - 10575y + 625$
c_5, c_8	$y^{28} + 2y^{27} + \cdots + y + 1$
c_7, c_{10}	$y^{28} - 39y^{27} + \cdots - 197y + 1$
c_{11}	$y^{28} - 22y^{27} + \cdots - 188y + 16$
c_{12}	$y^{28} - 6y^{27} + \cdots - 1310720y + 262144$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.029760 + 1.024060I$ $a = -0.76705 + 1.20618I$ $b = 0.33513 + 2.03849I$	$-1.70801 + 1.93955I$	$-4.01504 - 3.31370I$
$u = -0.029760 - 1.024060I$ $a = -0.76705 - 1.20618I$ $b = 0.33513 - 2.03849I$	$-1.70801 - 1.93955I$	$-4.01504 + 3.31370I$
$u = -0.205800 + 0.952470I$ $a = -0.890270 - 0.134444I$ $b = -1.028510 + 0.354995I$	$-1.87676 - 2.57239I$	$-5.76873 + 3.90772I$
$u = -0.205800 - 0.952470I$ $a = -0.890270 + 0.134444I$ $b = -1.028510 - 0.354995I$	$-1.87676 + 2.57239I$	$-5.76873 - 3.90772I$
$u = 0.703844 + 0.651022I$ $a = 0.364061 + 0.072255I$ $b = -0.169040 - 0.626677I$	$2.58954 - 1.93444I$	$4.44360 + 1.82417I$
$u = 0.703844 - 0.651022I$ $a = 0.364061 - 0.072255I$ $b = -0.169040 + 0.626677I$	$2.58954 + 1.93444I$	$4.44360 - 1.82417I$
$u = -0.233119 + 1.022850I$ $a = 0.432125 - 0.884732I$ $b = 0.046325 - 1.319720I$	$-0.84729 - 2.02401I$	$-1.05491 + 4.41629I$
$u = -0.233119 - 1.022850I$ $a = 0.432125 + 0.884732I$ $b = 0.046325 + 1.319720I$	$-0.84729 + 2.02401I$	$-1.05491 - 4.41629I$
$u = -0.592728 + 0.886067I$ $a = 0.419564 - 0.328119I$ $b = 0.484607 - 0.267874I$	$0.19636 - 2.32367I$	$1.59759 + 0.30167I$
$u = -0.592728 - 0.886067I$ $a = 0.419564 + 0.328119I$ $b = 0.484607 + 0.267874I$	$0.19636 + 2.32367I$	$1.59759 - 0.30167I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.126080 + 0.017717I$ $a = 1.48097 - 0.28232I$ $b = -0.203539 + 0.072850I$	$-9.14619 + 10.60730I$	$-4.00237 - 5.50977I$
$u = -1.126080 - 0.017717I$ $a = 1.48097 + 0.28232I$ $b = -0.203539 - 0.072850I$	$-9.14619 - 10.60730I$	$-4.00237 + 5.50977I$
$u = -1.213710 + 0.122756I$ $a = -1.169300 - 0.161303I$ $b = 0.313944 - 0.165481I$	$-6.88343 + 0.76194I$	$-9.63760 - 8.88824I$
$u = -1.213710 - 0.122756I$ $a = -1.169300 + 0.161303I$ $b = 0.313944 + 0.165481I$	$-6.88343 - 0.76194I$	$-9.63760 + 8.88824I$
$u = 0.134895 + 0.764791I$ $a = 0.249686 - 0.929537I$ $b = -0.794879 - 0.643863I$	$-1.33224 - 1.70353I$	$-4.58528 + 4.79833I$
$u = 0.134895 - 0.764791I$ $a = 0.249686 + 0.929537I$ $b = -0.794879 + 0.643863I$	$-1.33224 + 1.70353I$	$-4.58528 - 4.79833I$
$u = 0.679542 + 1.054720I$ $a = -0.182005 + 0.228644I$ $b = 0.574163 + 0.446259I$	$1.38884 + 7.31481I$	$-0.62097 - 4.93244I$
$u = 0.679542 - 1.054720I$ $a = -0.182005 - 0.228644I$ $b = 0.574163 - 0.446259I$	$1.38884 - 7.31481I$	$-0.62097 + 4.93244I$
$u = -0.460065 + 0.249682I$ $a = 0.997340 - 0.899044I$ $b = 0.291991 - 0.299264I$	$1.23290 - 0.94981I$	$4.62875 + 1.98787I$
$u = -0.460065 - 0.249682I$ $a = 0.997340 + 0.899044I$ $b = 0.291991 + 0.299264I$	$1.23290 + 0.94981I$	$4.62875 - 1.98787I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.55190+1.37856I$ $a=-0.123948-1.306340I$ $b=-0.07928-2.82342I$	$-13.4242-16.5538I$	$0.+7.97631I$
$u=-0.55190-1.37856I$ $a=-0.123948+1.306340I$ $b=-0.07928+2.82342I$	$-13.4242+16.5538I$	$0.-7.97631I$
$u=-0.52857+1.41990I$ $a=-0.376449-1.012200I$ $b=-0.77064-2.32349I$	$-13.6922+4.6715I$	0
$u=-0.52857-1.41990I$ $a=-0.376449+1.012200I$ $b=-0.77064+2.32349I$	$-13.6922-4.6715I$	0
$u=-0.61460+1.40685I$ $a=\ 0.274785+0.995117I$ $b=\ 0.28808+2.29388I$	$-10.96370-7.28590I$	0
$u=-0.61460-1.40685I$ $a=\ 0.274785-0.995117I$ $b=\ 0.28808-2.29388I$	$-10.96370+7.28590I$	0
$u=-0.46195+1.47320I$ $a=\ 0.040494+1.014100I$ $b=\ 0.21165+2.44842I$	$-12.15350-5.19576I$	$-13.77473+0.I$
$u=-0.46195-1.47320I$ $a=\ 0.040494-1.014100I$ $b=\ 0.21165-2.44842I$	$-12.15350+5.19576I$	$-13.77473+0.I$

II. $\boldsymbol{I_2^u = \langle -87u^{16} + 385u^{15} + \cdots + 77b - 41,\ -190u^{16} + 693u^{15} + \cdots + 231a - 163,\ u^{17} - 4u^{16} + \cdots - 6u^2 - 1\rangle}$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.822511u^{16} - 3u^{15} + \cdots + 1.92641u + 0.705628 \\ \frac{87}{77}u^{16} - 5u^{15} + \cdots - \frac{9}{77}u + \frac{41}{77} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.307359u^{16} - 3u^{15} + \cdots - 2.04329u + 2.82684 \\ -1.68831u^{16} + 5u^{15} + \cdots + 1.51948u + 2.07792 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1.99567u^{16} + 8u^{15} + \cdots + 4.56277u + 0.251082 \\ -1.05195u^{16} + 5u^{15} + \cdots + 3.24675u - 2.01299 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^4 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.722944u^{16} - 2u^{15} + \cdots + 0.982684u + 0.930736 \\ \frac{46}{33}u^{16} - 5u^{15} + \cdots - \frac{26}{33}u - \frac{5}{33} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.822511u^{16} - 3u^{15} + \cdots + 1.92641u + 0.705628 \\ \frac{65}{33}u^{16} - 8u^{15} + \cdots - \frac{31}{33}u + \frac{8}{33} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.995671u^{16} - 3u^{15} + \cdots + 0.437229u - 2.25108 \\ 0.757576u^{16} - 3u^{15} + \cdots - 4.51515u - 0.0606061 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.601732u^{16} - 4u^{15} + \cdots - 1.77489u + 1.90043 \\ -1.12121u^{16} + 2u^{15} + \cdots + 1.24242u + 2.96970 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{733}{231}u^{16} + 12u^{15} + \cdots - \frac{1504}{231}u - \frac{2089}{231}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{17} - 10u^{16} + \cdots - 12u + 1$
c_2	$u^{17} - 4u^{16} + \cdots - 6u^2 - 1$
c_3, c_9	$u^{17} - u^{16} + \cdots + 3u + 1$
c_4	$u^{17} + 2u^{16} + \cdots + 9u + 3$
c_5, c_8	$u^{17} + 3u^{15} + \cdots - u + 1$
c_6	$u^{17} + 4u^{16} + \cdots + 6u^2 + 1$
c_7, c_{10}	$u^{17} - 7u^{16} + \cdots + 3u - 1$
c_{11}	$u^{17} + 11u^{16} + \cdots - 3066u - 441$
c_{12}	$u^{17} + 5u^{16} + \cdots - 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{17} - 2y^{16} + \cdots - 72y - 1$
c_2, c_6	$y^{17} + 10y^{16} + \cdots - 12y - 1$
c_3, c_9	$y^{17} - 15y^{16} + \cdots - 5y - 1$
c_4	$y^{17} - 8y^{16} + \cdots - 69y - 9$
c_5, c_8	$y^{17} + 6y^{16} + \cdots - y - 1$
c_7, c_{10}	$y^{17} - 15y^{16} + \cdots - 7y - 1$
c_{11}	$y^{17} - 17y^{16} + \cdots + 1120140y - 194481$
c_{12}	$y^{17} - 7y^{16} + \cdots + 10y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.681671+0.839345I$ $a=-0.122858+0.250052I$ $b=-0.441734-0.354193I$	$-0.38004-2.63462I$	$-9.27234+5.42347I$
$u=-0.681671-0.839345I$ $a=-0.122858-0.250052I$ $b=-0.441734+0.354193I$	$-0.38004+2.63462I$	$-9.27234-5.42347I$
$u=\ \ 0.140165+1.110590I$ $a=\ \ 0.71958+1.33512I$ $b=-0.09285+2.38278I$	$-4.67353+6.46548I$	$-8.36385-4.08762I$
$u=\ \ 0.140165-1.110590I$ $a=\ \ 0.71958-1.33512I$ $b=-0.09285-2.38278I$	$-4.67353-6.46548I$	$-8.36385+4.08762I$
$u=\ \ 0.826686+0.794603I$ $a=-0.711849+0.393093I$ $b=-0.347366+0.674089I$	$1.46643-2.44849I$	$-3.63614+3.80526I$
$u=\ \ 0.826686-0.794603I$ $a=-0.711849-0.393093I$ $b=-0.347366-0.674089I$	$1.46643+2.44849I$	$-3.63614-3.80526I$
$u=\ \ 1.16029$ $a=-1.30387$ $b=\ \ 0.242504$	-6.83994	-5.94510
$u=\ \ 0.760360+0.946681I$ $a=\ \ 0.216684-0.748655I$ $b=-0.135378-0.914178I$	$0.99165+8.38015I$	$-2.49309-10.10429I$
$u=\ \ 0.760360-0.946681I$ $a=\ \ 0.216684+0.748655I$ $b=-0.135378+0.914178I$	$0.99165-8.38015I$	$-2.49309+10.10429I$
$u=\ \ 0.123423+0.767586I$ $a=\ \ 1.31748-1.02145I$ $b=\ \ 1.50929+0.04931I$	$-3.32631-5.28974I$	$-7.90203+5.12286I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.123423 - 0.767586I$ $a = 1.31748 + 1.02145I$ $b = 1.50929 - 0.04931I$	$-3.32631 + 5.28974I$	$-7.90203 - 5.12286I$
$u = -0.063406 + 1.278620I$ $a = -0.358068 - 0.728040I$ $b = 0.48768 - 1.65706I$	$-6.36689 - 2.53679I$	$-10.96403 + 3.03478I$
$u = -0.063406 - 1.278620I$ $a = -0.358068 + 0.728040I$ $b = 0.48768 + 1.65706I$	$-6.36689 + 2.53679I$	$-10.96403 - 3.03478I$
$u = 0.52000 + 1.40243I$ $a = 0.163383 - 1.128450I$ $b = 0.29881 - 2.51025I$	$-11.37900 + 5.95622I$	$-6.44408 - 3.49025I$
$u = 0.52000 - 1.40243I$ $a = 0.163383 + 1.128450I$ $b = 0.29881 + 2.51025I$	$-11.37900 - 5.95622I$	$-6.44408 + 3.49025I$
$u = -0.205705 + 0.307610I$ $a = 1.42758 + 1.56792I$ $b = -0.899718 + 0.379291I$	$-2.52117 + 1.45550I$	$-12.95189 - 5.06302I$
$u = -0.205705 - 0.307610I$ $a = 1.42758 - 1.56792I$ $b = -0.899718 - 0.379291I$	$-2.52117 - 1.45550I$	$-12.95189 + 5.06302I$

III. $\boldsymbol{I_3^u = \langle 343u^{10}a^3 + 5345u^{10}a^2 + \cdots + 5127a + 18129,\ u^{10}a^3 - 3u^{10}a^2 + \cdots + 26a + 1,\ u^{11} - 2u^{10} + \cdots + 4u - 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ -0.0262373a^3u^{10} - 0.408858a^2u^{10} + \cdots - 0.392182a - 1.38675 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.318825a^3u^{10} - 0.142507a^2u^{10} + \cdots - 0.164385a + 1.37895 \\ 1.32211a^3u^{10} + 0.701752a^2u^{10} + \cdots - 0.826589a + 0.354548 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.360514a^3u^{10} - 0.000152987a^2u^{10} + \cdots - 0.115582a + 0.209210 \\ 1.27721a^3u^{10} + 1.06035a^2u^{10} + \cdots + 1.09699a - 0.0332747 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.156276a^3u^{10} + 0.274918a^2u^{10} + \cdots + 0.700375a + 0.0499503 \\ 0.639180a^3u^{10} + 0.619292a^2u^{10} + \cdots - 0.125143a - 1.88136 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ -0.0262373a^3u^{10} - 0.408858a^2u^{10} + \cdots - 0.392182a - 1.38675 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.156276a^3u^{10} + 0.274918a^2u^{10} + \cdots + 0.700375a + 0.0499503 \\ 0.890691a^3u^{10} + 1.68729a^2u^{10} + \cdots - 0.249063a - 2.37512 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.538591a^3u^{10} - 0.338866a^2u^{10} + \cdots - 0.0135394a + 1.39976 \\ 1.48596a^3u^{10} + 1.15299a^2u^{10} + \cdots - 0.418267a - 0.209822 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{18852}{13073}u^{10}a^3 - \frac{8}{13073}u^{10}a^2 + \cdots - \frac{6044}{13073}a + \frac{50159}{13073}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{11}+8u^{10}+\cdots-18u^2-1)^4$
c_2, c_6	$(u^{11}+2u^{10}+\cdots+4u+1)^4$
c_3, c_9	$u^{44}-25u^{42}+\cdots+193u+1$
c_4	$u^{44}-6u^{43}+\cdots-351984u+130591$
c_5, c_8	$u^{44}-2u^{43}+\cdots+95u+25$
c_7, c_{10}	$u^{44}+5u^{43}+\cdots+281670u+28225$
c_{11}	$(u^{11}+5u^{10}+\cdots-10u-4)^4$
c_{12}	$(u^2+u+1)^{22}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{11} - 8y^{10} + \cdots - 36y - 1)^4$
c_2, c_6	$(y^{11} + 8y^{10} + \cdots - 18y^2 - 1)^4$
c_3, c_9	$y^{44} - 50y^{43} + \cdots + 33239y + 1$
c_4	$y^{44} - 44y^{43} + \cdots + 412133171800y + 17054009281$
c_5, c_8	$y^{44} + 10y^{43} + \cdots + 21775y + 625$
c_7, c_{10}	$y^{44} - 53y^{43} + \cdots - 30404080600y + 796650625$
c_{11}	$(y^{11} - 5y^{10} + \cdots + 108y - 16)^4$
c_{12}	$(y^2 + y + 1)^{22}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.617799 + 0.778228I$ $a = 0.589454 + 0.528793I$ $b = 0.540084 - 0.380969I$	$-0.43565 - 4.46673I$	$-8.45208 + 10.60791I$
$u = -0.617799 + 0.778228I$ $a = -0.056046 - 0.700162I$ $b = -0.643608 - 0.688149I$	$-0.435652 - 0.406964I$	$-8.45208 + 3.67970I$
$u = -0.617799 + 0.778228I$ $a = -0.439822 - 1.326850I$ $b = 0.597857 - 1.109030I$	$-0.435652 - 0.406964I$	$-8.45208 + 3.67970I$
$u = -0.617799 + 0.778228I$ $a = 1.41393 + 0.05528I$ $b = 1.03920 + 1.23994I$	$-0.43565 - 4.46673I$	$-8.45208 + 10.60791I$
$u = -0.617799 - 0.778228I$ $a = 0.589454 - 0.528793I$ $b = 0.540084 + 0.380969I$	$-0.43565 + 4.46673I$	$-8.45208 - 10.60791I$
$u = -0.617799 - 0.778228I$ $a = -0.056046 + 0.700162I$ $b = -0.643608 + 0.688149I$	$-0.435652 + 0.406964I$	$-8.45208 - 3.67970I$
$u = -0.617799 - 0.778228I$ $a = -0.439822 + 1.326850I$ $b = 0.597857 + 1.109030I$	$-0.435652 + 0.406964I$	$-8.45208 - 3.67970I$
$u = -0.617799 - 0.778228I$ $a = 1.41393 - 0.05528I$ $b = 1.03920 - 1.23994I$	$-0.43565 + 4.46673I$	$-8.45208 - 10.60791I$
$u = 1.06351$ $a = -1.49958 + 0.14846I$ $b = -0.022831 + 0.204938I$	$-7.98334 + 2.02988I$	$-7.16744 - 3.46410I$
$u = 1.06351$ $a = -1.49958 - 0.14846I$ $b = -0.022831 - 0.204938I$	$-7.98334 - 2.02988I$	$-7.16744 + 3.46410I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.06351$ $a = 1.61628 + 0.35059I$ $b = -0.233271 - 0.238643I$	$-7.98334 - 2.02988I$	$-7.16744 + 3.46410I$
$u = 1.06351$ $a = 1.61628 - 0.35059I$ $b = -0.233271 + 0.238643I$	$-7.98334 + 2.02988I$	$-7.16744 - 3.46410I$
$u = 0.221199 + 1.131890I$ $a = -0.282121 - 1.073420I$ $b = 0.52445 - 3.15670I$	$-4.38744 + 7.66724I$	$-6.48609 - 11.64165I$
$u = 0.221199 + 1.131890I$ $a = -0.722841 - 0.452983I$ $b = 0.335223 - 0.182775I$	$-4.38744 + 3.60747I$	$-6.48609 - 4.71344I$
$u = 0.221199 + 1.131890I$ $a = -0.253046 + 1.234040I$ $b = -0.04671 + 2.56573I$	$-4.38744 + 3.60747I$	$-6.48609 - 4.71344I$
$u = 0.221199 + 1.131890I$ $a = 1.44648 + 1.52804I$ $b = 1.39498 + 1.71537I$	$-4.38744 + 7.66724I$	$-6.48609 - 11.64165I$
$u = 0.221199 - 1.131890I$ $a = -0.282121 + 1.073420I$ $b = 0.52445 + 3.15670I$	$-4.38744 - 7.66724I$	$-6.48609 + 11.64165I$
$u = 0.221199 - 1.131890I$ $a = -0.722841 + 0.452983I$ $b = 0.335223 + 0.182775I$	$-4.38744 - 3.60747I$	$-6.48609 + 4.71344I$
$u = 0.221199 - 1.131890I$ $a = -0.253046 - 1.234040I$ $b = -0.04671 - 2.56573I$	$-4.38744 - 3.60747I$	$-6.48609 + 4.71344I$
$u = 0.221199 - 1.131890I$ $a = 1.44648 - 1.52804I$ $b = 1.39498 - 1.71537I$	$-4.38744 - 7.66724I$	$-6.48609 + 11.64165I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.029838 + 1.264780I$ $a = -0.177967 + 0.946487I$ $b = -0.42614 + 2.84232I$	$-6.65088 - 0.57787I$	$-11.49826 - 1.42165I$
$u = -0.029838 + 1.264780I$ $a = -1.062190 - 0.030421I$ $b = -0.504118 + 0.124524I$	$-6.65088 - 0.57787I$	$-11.49826 - 1.42165I$
$u = -0.029838 + 1.264780I$ $a = -0.11469 - 1.68739I$ $b = 0.13874 - 2.62771I$	$-6.65088 - 4.63764I$	$-11.49826 + 5.50656I$
$u = -0.029838 + 1.264780I$ $a = -0.058572 + 0.155353I$ $b = -2.24297 + 0.33866I$	$-6.65088 - 4.63764I$	$-11.49826 + 5.50656I$
$u = -0.029838 - 1.264780I$ $a = -0.177967 - 0.946487I$ $b = -0.42614 - 2.84232I$	$-6.65088 + 0.57787I$	$-11.49826 + 1.42165I$
$u = -0.029838 - 1.264780I$ $a = -1.062190 + 0.030421I$ $b = -0.504118 - 0.124524I$	$-6.65088 + 0.57787I$	$-11.49826 + 1.42165I$
$u = -0.029838 - 1.264780I$ $a = -0.11469 + 1.68739I$ $b = 0.13874 + 2.62771I$	$-6.65088 + 4.63764I$	$-11.49826 - 5.50656I$
$u = -0.029838 - 1.264780I$ $a = -0.058572 - 0.155353I$ $b = -2.24297 - 0.33866I$	$-6.65088 + 4.63764I$	$-11.49826 - 5.50656I$
$u = 0.52365 + 1.35993I$ $a = -0.440908 + 1.028850I$ $b = -1.08236 + 2.43446I$	$-12.23950 + 3.61593I$	$-9.10897 - 0.19933I$
$u = 0.52365 + 1.35993I$ $a = 0.052366 - 1.202380I$ $b = 0.35777 - 2.45711I$	$-12.2395 + 7.6757I$	$-9.10897 - 7.12753I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.52365 + 1.35993I$ $a = 0.337952 - 1.232570I$ $b = 0.40689 - 2.36204I$	$-12.23950 + 3.61593I$	$-9.10897 - 0.19933I$
$u = 0.52365 + 1.35993I$ $a = -0.177318 + 1.393410I$ $b = 0.04268 + 3.00587I$	$-12.2395 + 7.6757I$	$-9.10897 - 7.12753I$
$u = 0.52365 - 1.35993I$ $a = -0.440908 - 1.028850I$ $b = -1.08236 - 2.43446I$	$-12.23950 - 3.61593I$	$-9.10897 + 0.19933I$
$u = 0.52365 - 1.35993I$ $a = 0.052366 + 1.202380I$ $b = 0.35777 + 2.45711I$	$-12.2395 - 7.6757I$	$-9.10897 + 7.12753I$
$u = 0.52365 - 1.35993I$ $a = 0.337952 + 1.232570I$ $b = 0.40689 + 2.36204I$	$-12.23950 - 3.61593I$	$-9.10897 + 0.19933I$
$u = 0.52365 - 1.35993I$ $a = -0.177318 - 1.393410I$ $b = 0.04268 - 3.00587I$	$-12.2395 - 7.6757I$	$-9.10897 + 7.12753I$
$u = 0.371033 + 0.270161I$ $a = 0.01049750 + 0.00431977I$ $b = -1.009870 - 0.210773I$	$-1.90371 - 1.10694I$	$-0.37088 - 1.58915I$
$u = 0.371033 + 0.270161I$ $a = 2.04632 - 0.92835I$ $b = -0.321194 - 0.354636I$	$-1.90371 - 1.10694I$	$-0.37088 - 1.58915I$
$u = 0.371033 + 0.270161I$ $a = -2.71130 + 0.68471I$ $b = -0.187627 - 0.749850I$	$-1.90371 - 5.16670I$	$-0.37088 + 5.33905I$
$u = 0.371033 + 0.270161I$ $a = 2.48312 + 1.55855I$ $b = 1.342820 - 0.120180I$	$-1.90371 - 5.16670I$	$-0.37088 + 5.33905I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.371033 - 0.270161I$ $a = 0.01049750 - 0.00431977I$ $b = -1.009870 + 0.210773I$	$-1.90371 + 1.10694I$	$-0.37088 + 1.58915I$
$u = 0.371033 - 0.270161I$ $a = 2.04632 + 0.92835I$ $b = -0.321194 + 0.354636I$	$-1.90371 + 1.10694I$	$-0.37088 + 1.58915I$
$u = 0.371033 - 0.270161I$ $a = -2.71130 - 0.68471I$ $b = -0.187627 + 0.749850I$	$-1.90371 + 5.16670I$	$-0.37088 - 5.33905I$
$u = 0.371033 - 0.270161I$ $a = 2.48312 - 1.55855I$ $b = 1.342820 + 0.120180I$	$-1.90371 + 5.16670I$	$-0.37088 - 5.33905I$

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

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} 1 \\ u+1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ a-u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 2 \\ -au-a+1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} au+a+u \\ au+a+u+1 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} a+1 \\ a-u+1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a \\ au+2a-u \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} -au-u+1 \\ -2au-a-u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3u + 3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.500000+0.866025I$ $a=\ \ 0.473561+0.444772I$ $b=\ \ 0.973561-0.421254I$	$-\,4.05977I$	$1.50000+2.59808I$
$u=-0.500000+0.866025I$ $a=-1.47356-0.44477I$ $b=-0.97356-1.31080I$	$-\,4.05977I$	$1.50000+2.59808I$
$u=-0.500000-0.866025I$ $a=\ \ 0.473561-0.444772I$ $b=\ \ 0.973561+0.421254I$	$4.05977I$	$1.50000-2.59808I$
$u=-0.500000-0.866025I$ $a=-1.47356+0.44477I$ $b=-0.97356+1.31080I$	$4.05977I$	$1.50000-2.59808I$

V. $I^u_5 = \langle b - a + 1,\ a^2 - au - a + 1,\ u^2 + u + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5u - 1$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = \quad 0.148403 - 0.632502I$ $b = -0.851597 - 0.632502I$	0	$1.50000 - 4.33013I$
$u = -0.500000 + 0.866025I$ $a = \quad 0.35160 + 1.49853I$ $b = -0.64840 + 1.49853I$	0	$1.50000 - 4.33013I$
$u = -0.500000 - 0.866025I$ $a = \quad 0.148403 + 0.632502I$ $b = -0.851597 + 0.632502I$	0	$1.50000 + 4.33013I$
$u = -0.500000 - 0.866025I$ $a = \quad 0.35160 - 1.49853I$ $b = -0.64840 - 1.49853I$	0	$1.50000 + 4.33013I$

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^4)(u^{11}+8u^{10}+\cdots-18u^2-1)^4$ $\cdot(u^{17}-10u^{16}+\cdots-12u+1)(u^{28}+17u^{27}+\cdots+1360u+256)$
c_2	$((u^2+u+1)^4)(u^{11}+2u^{10}+\cdots+4u+1)^4(u^{17}-4u^{16}+\cdots-6u^2-1)$ $\cdot(u^{28}-9u^{27}+\cdots-124u+16)$
c_3, c_9	$(u^4-u^3+2u+1)(u^4+2u^3-u+1)(u^{17}-u^{16}+\cdots+3u+1)$ $\cdot(u^{28}+u^{27}+\cdots+u+1)(u^{44}-25u^{42}+\cdots+193u+1)$
c_4	$(u^4-3u+3)(u^4+3u^3+\cdots+3u+3)(u^{17}+2u^{16}+\cdots+9u+3)$ $\cdot(u^{28}-2u^{27}+\cdots-45u+25)(u^{44}-6u^{43}+\cdots-351984u+130591)$
c_5, c_8	$(u^4-u^3+2u+1)(u^4+2u^3-u+1)(u^{17}+3u^{15}+\cdots-u+1)$ $\cdot(u^{28}+u^{26}+\cdots+3u+1)(u^{44}-2u^{43}+\cdots+95u+25)$
c_6	$((u^2-u+1)^4)(u^{11}+2u^{10}+\cdots+4u+1)^4(u^{17}+4u^{16}+\cdots+6u^2+1)$ $\cdot(u^{28}-9u^{27}+\cdots-124u+16)$
c_7, c_{10}	$((u^2-u+1)^4)(u^{17}-7u^{16}+\cdots+3u-1)(u^{28}+u^{27}+\cdots+21u+1)$ $\cdot(u^{44}+5u^{43}+\cdots+281670u+28225)$
c_{11}	$u^8(u^{11}+5u^{10}+\cdots-10u-4)^4(u^{17}+11u^{16}+\cdots-3066u-441)$ $\cdot(u^{28}-28u^{27}+\cdots-50u+4)$
c_{12}	$((u^2-u+1)^4)(u^2+u+1)^{22}(u^{17}+5u^{16}+\cdots-2u-1)$ $\cdot(u^{28}-26u^{27}+\cdots-5120u+512)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^4)(y^{11}-8y^{10}+\cdots-36y-1)^4$ $\cdot(y^{17}-2y^{16}+\cdots-72y-1)(y^{28}-11y^{27}+\cdots+264448y+65536)$
c_2, c_6	$((y^2+y+1)^4)(y^{11}+8y^{10}+\cdots-18y^2-1)^4$ $\cdot(y^{17}+10y^{16}+\cdots-12y-1)(y^{28}+17y^{27}+\cdots+1360y+256)$
c_3, c_9	$(y^4-4y^3+6y^2-y+1)(y^4-y^3+6y^2-4y+1)$ $\cdot(y^{17}-15y^{16}+\cdots-5y-1)(y^{28}-31y^{27}+\cdots-7y+1)$ $\cdot(y^{44}-50y^{43}+\cdots+33239y+1)$
c_4	$(y^4+6y^2-9y+9)(y^4-3y^3+\cdots+9y+9)(y^{17}-8y^{16}+\cdots-69y-9)$ $\cdot(y^{28}-16y^{27}+\cdots-10575y+625)$ $\cdot(y^{44}-44y^{43}+\cdots+412133171800y+17054009281)$
c_5, c_8	$(y^4-4y^3+6y^2-y+1)(y^4-y^3+6y^2-4y+1)(y^{17}+6y^{16}+\cdots-y-1)$ $\cdot(y^{28}+2y^{27}+\cdots+y+1)(y^{44}+10y^{43}+\cdots+21775y+625)$
c_7, c_{10}	$((y^2+y+1)^4)(y^{17}-15y^{16}+\cdots-7y-1)$ $\cdot(y^{28}-39y^{27}+\cdots-197y+1)$ $\cdot(y^{44}-53y^{43}+\cdots-30404080600y+796650625)$
c_{11}	$y^8(y^{11}-5y^{10}+\cdots+108y-16)^4$ $\cdot(y^{17}-17y^{16}+\cdots+1120140y-194481)$ $\cdot(y^{28}-22y^{27}+\cdots-188y+16)$
c_{12}	$((y^2+y+1)^{26})(y^{17}-7y^{16}+\cdots+10y-1)$ $\cdot(y^{28}-6y^{27}+\cdots-1310720y+262144)$