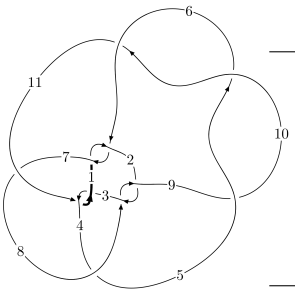
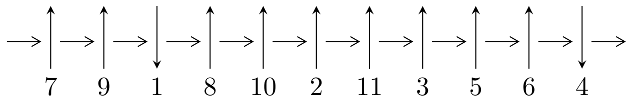
$11a_{321}$ ($K11a_{321}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 1073u^{25} + 10099u^{24} + \cdots + 16b - 21648,\ -299u^{25} - 2899u^{24} + \cdots + 32a + 7504, \\
&\quad u^{26} + 11u^{25} + \cdots + 16u - 32\rangle \\
I_2^u &= \langle u^3a + u^4 - u^3 - au - u^2 + b - a,\ u^3a - u^4 + 2u^3 + a^2 - au + 2u^2 - 2a - 4u,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle \\
I_3^u &= \langle -325652548336533a^7u^4 - 216522091497175a^6u^4 + \cdots + 461842568426094a - 37300538969198, \\
&\quad 2a^7u^4 + 3a^6u^4 + \cdots + 63a + 36,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle \\
I_4^u &= \langle u^{15} - 2u^{14} - 8u^{13} + 16u^{12} + 23u^{11} - 49u^{10} - 30u^9 + 74u^8 + 21u^7 - 63u^6 - 11u^5 + 33u^4 + 3u^3 - 9u^2 + b + \\
&\quad - u^{14} + u^{13} + 8u^{12} - 8u^{11} - 24u^{10} + 24u^9 + 36u^8 - 34u^7 - 34u^6 + 25u^5 + 24u^4 - 9u^3 - 10u^2 + a + 3, \\
&\quad u^{16} - 9u^{14} + u^{13} + 33u^{12} - 6u^{11} - 64u^{10} + 13u^9 + 73u^8 - 12u^7 - 52u^6 + 4u^5 + 22u^4 - 4u^2 + 1\rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 92 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. $I_1^u = \langle 1073u^{25} + 10099u^{24} + \cdots + 16b - 21648,\ -299u^{25} - 2899u^{24} + \cdots + 32a + 7504,\ u^{26} + 11u^{25} + \cdots + 16u - 32\rangle$

(i) Arc colorings

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

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

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

$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{299}{32}u^{25} + \frac{2899}{32}u^{24} + \cdots + 301u - \frac{469}{2} \\ -67.0625u^{25} - 631.188u^{24} + \cdots - 1534u + 1353 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{2445}{32}u^{25} + \frac{23097}{32}u^{24} + \cdots + 1835u - \frac{3175}{2} \\ -67.0625u^{25} - 631.188u^{24} + \cdots - 1534u + 1353 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -13.7500u^{25} - 133.250u^{24} + \cdots - 383.500u + 320.500 \\ 4u^{25} + 42u^{24} + \cdots + \frac{377}{2}u - 136 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1181}{16}u^{25} + \frac{5595}{8}u^{24} + \cdots + 1708u - 1515 \\ \frac{107}{16}u^{25} + \frac{871}{16}u^{24} + \cdots - 43u - 22 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{39}{4}u^{25} + \frac{365}{4}u^{24} + \cdots + 197u - \frac{367}{2} \\ -4u^{25} - 42u^{24} + \cdots - \frac{375}{2}u + 136 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{5}{4}u^{25} + \frac{75}{4}u^{24} + \cdots + \frac{863}{4}u - 128 \\ \frac{185}{4}u^{25} + \frac{891}{2}u^{24} + \cdots + 1245u - 1048 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{5}{4}u^{25} + \frac{75}{4}u^{24} + \cdots + \frac{863}{4}u - 128 \\ \frac{185}{4}u^{25} + \frac{891}{2}u^{24} + \cdots + 1245u - 1048 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{333}{2}u^{25} + 1571u^{24} + \cdots + 3724u - 3326$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_6 c_8	$u^{26} + 7u^{24} + \cdots + 3u - 1$
c_3, c_{11}	$u^{26} - 12u^{25} + \cdots - 448u + 32$
c_4, c_7	$u^{26} - 9u^{24} + \cdots - 16u^2 - 1$
c_5, c_9, c_{10}	$u^{26} + 11u^{25} + \cdots + 16u - 32$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6 c_8	$y^{26} + 14y^{25} + \cdots - y + 1$
c_3, c_{11}	$y^{26} + 10y^{25} + \cdots - 27136y + 1024$
c_4, c_7	$y^{26} - 18y^{25} + \cdots + 32y + 1$
c_5, c_9, c_{10}	$y^{26} - 23y^{25} + \cdots - 5888y + 1024$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.383322 + 0.913347I$ $a = 0.15913 - 1.78657I$ $b = -0.55889 - 1.30495I$	$-2.65503 + 11.68360I$	$5.29865 - 8.17521I$
$u = 0.383322 - 0.913347I$ $a = 0.15913 + 1.78657I$ $b = -0.55889 + 1.30495I$	$-2.65503 - 11.68360I$	$5.29865 + 8.17521I$
$u = -0.828242 + 0.616056I$ $a = 0.43855 + 1.53930I$ $b = -0.081709 + 0.666053I$	$-1.85940 - 2.41843I$	$9.7124 + 14.3057I$
$u = -0.828242 - 0.616056I$ $a = 0.43855 - 1.53930I$ $b = -0.081709 - 0.666053I$	$-1.85940 + 2.41843I$	$9.7124 - 14.3057I$
$u = 0.317740 + 0.989994I$ $a = -0.13580 + 1.61988I$ $b = 0.424496 + 1.163430I$	$-5.41034 + 5.29072I$	$3.13484 - 6.09748I$
$u = 0.317740 - 0.989994I$ $a = -0.13580 - 1.61988I$ $b = 0.424496 - 1.163430I$	$-5.41034 - 5.29072I$	$3.13484 + 6.09748I$
$u = 0.867391 + 0.763321I$ $a = 0.748452 - 0.780722I$ $b = 0.380945 - 1.145790I$	$-1.25182 - 6.02050I$	$5.93358 + 4.78066I$
$u = 0.867391 - 0.763321I$ $a = 0.748452 + 0.780722I$ $b = 0.380945 + 1.145790I$	$-1.25182 + 6.02050I$	$5.93358 - 4.78066I$
$u = 0.604803 + 0.424043I$ $a = 0.576639 + 0.245391I$ $b = 0.695203 - 0.396515I$	$3.26437 + 1.57845I$	$12.40306 - 2.05363I$
$u = 0.604803 - 0.424043I$ $a = 0.576639 - 0.245391I$ $b = 0.695203 + 0.396515I$	$3.26437 - 1.57845I$	$12.40306 + 2.05363I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.155329 + 0.682857I$ $a = -0.12123 - 1.47536I$ $b = -0.595161 - 0.658480I$	$1.79534 + 1.92657I$	$9.32234 - 4.27733I$
$u = 0.155329 - 0.682857I$ $a = -0.12123 + 1.47536I$ $b = -0.595161 + 0.658480I$	$1.79534 - 1.92657I$	$9.32234 + 4.27733I$
$u = 1.081110 + 0.752925I$ $a = -0.476440 + 0.754455I$ $b = -0.236698 + 1.023340I$	$-3.21650 + 0.73193I$	$6.23274 + 2.78423I$
$u = 1.081110 - 0.752925I$ $a = -0.476440 - 0.754455I$ $b = -0.236698 - 1.023340I$	$-3.21650 - 0.73193I$	$6.23274 - 2.78423I$
$u = -1.37365 + 0.35020I$ $a = -0.829144 - 1.069810I$ $b = 0.726167 - 0.875974I$	$6.54594 - 5.84781I$	$12.9077 + 6.2870I$
$u = -1.37365 - 0.35020I$ $a = -0.829144 + 1.069810I$ $b = 0.726167 + 0.875974I$	$6.54594 + 5.84781I$	$12.9077 - 6.2870I$
$u = -1.47715$ $a = -0.340449$ $b = 0.812944$	7.01191	13.1000
$u = -1.51143 + 0.09637I$ $a = 0.142803 + 0.338489I$ $b = -0.920008 - 0.217229I$	$10.23750 - 3.38664I$	$16.0962 + 0.I$
$u = -1.51143 - 0.09637I$ $a = 0.142803 - 0.338489I$ $b = -0.920008 + 0.217229I$	$10.23750 + 3.38664I$	$16.0962 + 0.I$
$u = -1.47229 + 0.38599I$ $a = 0.852447 + 0.991797I$ $b = -0.618131 + 1.238700I$	$0.31031 - 10.20530I$	$7.00000 + 6.34949I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.47229-0.38599I$ $a=\ \ 0.852447-0.991797I$ $b=-0.618131-1.238700I$	$0.31031+10.20530I$	$7.00000-6.34949I$
$u=-1.48560+0.35379I$ $a=-0.921287-1.008460I$ $b=\ \ 0.73457-1.37086I$	$3.3294-16.2583I$	$0.+8.72442I$
$u=-1.48560-0.35379I$ $a=-0.921287+1.008460I$ $b=\ \ 0.73457+1.37086I$	$3.3294+16.2583I$	$0.-8.72442I$
$u=\ \ 0.423114$ $a=\ \ 0.218860$ $b=-0.331232$	0.617191	16.1820
$u=-1.71146+0.07064I$ $a=-0.123322-0.123466I$ $b=-0.191640-0.759101I$	$8.12481+2.87714I$	0
$u=-1.71146-0.07064I$ $a=-0.123322+0.123466I$ $b=-0.191640+0.759101I$	$8.12481-2.87714I$	0

II. $\boldsymbol{I_2^u = \langle u^3a + u^4 - u^3 - au - u^2 + b - a,\ u^3a - u^4 + 2u^3 + a^2 - au + 2u^2 - 2a - 4u,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} a \\ -u^3a - u^4 + u^3 + au + u^2 + a \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^3a + u^4 - u^3 - au - u^2 \\ -u^3a - u^4 + u^3 + au + u^2 + a \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u^4 + u^2a + u^3 + u^2 - a - u + 1 \\ -u^4a + 2u^2a - u^2 + u + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^3a + au + a + u - 1 \\ -u^4 - u^2a + 3u^2 - 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^3a - u^4 + 2au + 2u^2 - 1 \\ -a - u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^3a - u^4 + 2au + 2u^2 - 1 \\ -a - u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -8u^3 + 16u + 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_6 c_8	$u^{10} + 2u^9 + \cdots + 8u + 17$
c_3, c_{11}	$(u^5 + u^4 + 2u^3 + u^2 + u + 1)^2$
c_4, c_7	$u^{10} + 2u^9 + 3u^8 + 4u^6 + 15u^4 - 16u^3 + 33u^2 - 20u + 7$
c_5, c_9, c_{10}	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6 c_8	$y^{10} + 6y^9 + \cdots + 786y + 289$
c_3, c_{11}	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)^2$
c_4, c_7	$y^{10} + 2y^9 + \cdots + 62y + 49$
c_5, c_9, c_{10}	$(y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.21774$ $a = 1.29401 + 0.59312I$ $b = -0.466896 + 0.941886I$	-0.132640	4.96230
$u = -1.21774$ $a = 1.29401 - 0.59312I$ $b = -0.466896 - 0.941886I$	-0.132640	4.96230
$u = -0.309916 + 0.549911I$ $a = -0.422523 - 1.226950I$ $b = 0.617609 - 1.263280I$	$-4.27660 - 3.06116I$	$3.03023 + 8.86130I$
$u = -0.309916 + 0.549911I$ $a = 1.86122 + 1.78470I$ $b = -0.060281 + 1.331670I$	$-4.27660 - 3.06116I$	$3.03023 + 8.86130I$
$u = -0.309916 - 0.549911I$ $a = -0.422523 + 1.226950I$ $b = 0.617609 + 1.263280I$	$-4.27660 + 3.06116I$	$3.03023 - 8.86130I$
$u = -0.309916 - 0.549911I$ $a = 1.86122 - 1.78470I$ $b = -0.060281 - 1.331670I$	$-4.27660 + 3.06116I$	$3.03023 - 8.86130I$
$u = 1.41878 + 0.21917I$ $a = 1.00071 - 1.33190I$ $b = -0.547449 - 1.293710I$	$6.81032 + 8.80167I$	$11.48863 - 6.99717I$
$u = 1.41878 + 0.21917I$ $a = -0.233411 + 0.238092I$ $b = 1.45702 - 0.30917I$	$6.81032 + 8.80167I$	$11.48863 - 6.99717I$
$u = 1.41878 - 0.21917I$ $a = 1.00071 + 1.33190I$ $b = -0.547449 + 1.293710I$	$6.81032 - 8.80167I$	$11.48863 + 6.99717I$
$u = 1.41878 - 0.21917I$ $a = -0.233411 - 0.238092I$ $b = 1.45702 + 0.30917I$	$6.81032 - 8.80167I$	$11.48863 + 6.99717I$

III. $I^u_3 = \langle -3.26\times10^{14}a^7u^4 - 2.17\times10^{14}a^6u^4 + \cdots + 4.62\times10^{14}a - 3.73\times10^{13},\ 2a^7u^4 + 3a^6u^4 + \cdots + 63a + 36,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle$

(i) Arc colorings

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

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

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

$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} a \\ 1.78373a^7u^4 + 1.18598a^6u^4 + \cdots - 2.52970a + 0.204311 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.78373a^7u^4 - 1.18598a^6u^4 + \cdots + 3.52970a - 0.204311 \\ 1.78373a^7u^4 + 1.18598a^6u^4 + \cdots - 2.52970a + 0.204311 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.513662a^7u^4 - 0.154648a^6u^4 + \cdots + 1.00013a + 0.425409 \\ 0.452703a^7u^4 + 0.296357a^6u^4 + \cdots - 0.697071a - 0.200491 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.431150a^7u^4 - 0.236002a^6u^4 + \cdots + 1.67334a - 0.859074 \\ 1.74389a^7u^4 + 0.846631a^6u^4 + \cdots - 3.09895a + 1.01675 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.158932a^7u^4 + 0.0166854a^6u^4 + \cdots + 0.0570178a + 1.29770 \\ 0.0505083a^7u^4 - 0.709704a^6u^4 + \cdots + 0.671481a + 1.16410 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.381857a^7u^4 + 0.0243899a^6u^4 + \cdots + 1.70012a + 0.510808 \\ -1.20422a^7u^4 - 0.158188a^6u^4 + \cdots + 1.44338a - 0.285170 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.381857a^7u^4 + 0.0243899a^6u^4 + \cdots + 1.70012a + 0.510808 \\ -1.20422a^7u^4 - 0.158188a^6u^4 + \cdots + 1.44338a - 0.285170 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{52949256522924}{91283920109957}a^7u^4 + \frac{90213951943262}{91283920109957}a^6u^4 + \cdots + \frac{111428618111312}{91283920109957}a + \frac{970857959574538}{91283920109957}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_6 c_8	$u^{40} - u^{39} + \cdots + 112u + 32$
c_3, c_{11}	$(u^5 + u^4 + 2u^3 + u^2 + u + 1)^8$
c_4, c_7	$u^{40} - 7u^{39} + \cdots + 80u + 32$
c_5, c_9, c_{10}	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)^8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6 c_8	$y^{40} + 29y^{39} + \cdots + 8960y + 1024$
c_3, c_{11}	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)^8$
c_4, c_7	$y^{40} + 5y^{39} + \cdots + 9984y + 1024$
c_5, c_9, c_{10}	$(y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)^8$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.21774$ $a=-1.207790+0.238764I$ $b=\ \ 1.020160+0.833032I$	$3.33884+4.40083I$	$8.22546-3.49859I$
$u=-1.21774$ $a=-1.207790-0.238764I$ $b=\ \ 1.020160-0.833032I$	$3.33884-4.40083I$	$8.22546+3.49859I$
$u=-1.21774$ $a=\ \ 0.256260+0.476517I$ $b=-0.23486+1.89553I$	$-2.20462-1.53058I$	$3.99626+4.43065I$
$u=-1.21774$ $a=\ \ 0.256260-0.476517I$ $b=-0.23486-1.89553I$	$-2.20462+1.53058I$	$3.99626-4.43065I$
$u=-1.21774$ $a=\ \ 0.40240+1.64523I$ $b=-0.00279+1.47385I$	$-2.20462+1.53058I$	$3.99626-4.43065I$
$u=-1.21774$ $a=\ \ 0.40240-1.64523I$ $b=-0.00279-1.47385I$	$-2.20462-1.53058I$	$3.99626+4.43065I$
$u=-1.21774$ $a=-1.80751+0.70455I$ $b=\ \ 0.067800+0.664970I$	$3.33884-4.40083I$	$8.22546+3.49859I$
$u=-1.21774$ $a=-1.80751-0.70455I$ $b=\ \ 0.067800-0.664970I$	$3.33884+4.40083I$	$8.22546-3.49859I$
$u=-0.309916+0.549911I$ $a=-0.614210-0.356072I$ $b=-1.112460-0.022805I$	$1.26686-5.93141I$	$7.25943+7.92923I$
$u=-0.309916+0.549911I$ $a=-0.077663+0.645448I$ $b=\ \ 0.540737-0.024289I$	$-2.20462-1.53058I$	$3.99626+4.43065I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.309916+0.549911I$ $a=-0.69063-1.44845I$ $b=-0.631776-0.881136I$	$1.26686+2.87025I$	$7.25943+0.93206I$
$u=-0.309916+0.549911I$ $a=\ \ 0.72433+1.72452I$ $b=-0.28691+1.51546I$	-4.27660	$3.03023+0.I$
$u=-0.309916+0.549911I$ $a=-1.94655-0.78265I$ $b=-0.060228-1.074110I$	-4.27660	$3.03023+0.I$
$u=-0.309916+0.549911I$ $a=\ \ 0.72536-2.06070I$ $b=\ \ 0.330888-0.359958I$	$1.26686+2.87025I$	$7.25943+0.93206I$
$u=-0.309916+0.549911I$ $a=\ \ 0.50296+2.30075I$ $b=-0.127790+1.025730I$	$-2.20462-1.53058I$	$3.99626+4.43065I$
$u=-0.309916+0.549911I$ $a=-0.41156-2.99999I$ $b=\ \ 0.451097-1.069650I$	$1.26686-5.93141I$	$7.25943+7.92923I$
$u=-0.309916-0.549911I$ $a=-0.614210+0.356072I$ $b=-1.112460+0.022805I$	$1.26686+5.93141I$	$7.25943-7.92923I$
$u=-0.309916-0.549911I$ $a=-0.077663-0.645448I$ $b=\ \ 0.540737+0.024289I$	$-2.20462+1.53058I$	$3.99626-4.43065I$
$u=-0.309916-0.549911I$ $a=-0.69063+1.44845I$ $b=-0.631776+0.881136I$	$1.26686-2.87025I$	$7.25943-0.93206I$
$u=-0.309916-0.549911I$ $a=\ \ 0.72433-1.72452I$ $b=-0.28691-1.51546I$	-4.27660	$3.03023+0.I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.309916 - 0.549911I$ $a = -1.94655 + 0.78265I$ $b = -0.060228 + 1.074110I$	-4.27660	$3.03023 + 0.I$
$u = -0.309916 - 0.549911I$ $a = 0.72536 + 2.06070I$ $b = 0.330888 + 0.359958I$	$1.26686 - 2.87025I$	$7.25943 - 0.93206I$
$u = -0.309916 - 0.549911I$ $a = 0.50296 - 2.30075I$ $b = -0.127790 - 1.025730I$	$-2.20462 + 1.53058I$	$3.99626 - 4.43065I$
$u = -0.309916 - 0.549911I$ $a = -0.41156 + 2.99999I$ $b = 0.451097 + 1.069650I$	$1.26686 + 5.93141I$	$7.25943 - 7.92923I$
$u = 1.41878 + 0.21917I$ $a = -0.862919 + 0.408494I$ $b = 0.68021 + 1.39772I$	$1.26686 + 2.87025I$	$7.25943 + 0.93206I$
$u = 1.41878 + 0.21917I$ $a = 0.787041 - 0.329401I$ $b = -1.02988 - 1.04062I$	$1.26686 + 5.93141I$	$7.25943 - 7.92923I$
$u = 1.41878 + 0.21917I$ $a = 1.194210 + 0.076658I$ $b = -0.161461 - 0.775177I$	$1.26686 + 2.87025I$	$7.25943 + 0.93206I$
$u = 1.41878 + 0.21917I$ $a = 0.407015 - 1.193670I$ $b = -0.464952 - 0.997444I$	6.81032	$11.48863 + 0.I$
$u = 1.41878 + 0.21917I$ $a = -0.808970 + 1.033880I$ $b = 0.427482 + 1.218940I$	$3.33884 + 4.40083I$	$8.22546 - 3.49859I$
$u = 1.41878 + 0.21917I$ $a = -1.37363 + 0.36155I$ $b = 0.228681 + 1.161970I$	$1.26686 + 5.93141I$	$7.25943 - 7.92923I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.41878 + 0.21917I$ $a = 0.307395 - 0.017583I$ $b = -0.982401 + 0.242528I$	$3.33884 + 4.40083I$	$8.22546 - 3.49859I$
$u = 1.41878 + 0.21917I$ $a = -0.0055411 - 0.0806818I$ $b = 0.848456 - 0.805185I$	6.81032	$11.48863 + 0.I$
$u = 1.41878 - 0.21917I$ $a = -0.862919 - 0.408494I$ $b = 0.68021 - 1.39772I$	$1.26686 - 2.87025I$	$7.25943 - 0.93206I$
$u = 1.41878 - 0.21917I$ $a = 0.787041 + 0.329401I$ $b = -1.02988 + 1.04062I$	$1.26686 - 5.93141I$	$7.25943 + 7.92923I$
$u = 1.41878 - 0.21917I$ $a = 1.194210 - 0.076658I$ $b = -0.161461 + 0.775177I$	$1.26686 - 2.87025I$	$7.25943 - 0.93206I$
$u = 1.41878 - 0.21917I$ $a = 0.407015 + 1.193670I$ $b = -0.464952 + 0.997444I$	6.81032	$11.48863 + 0.I$
$u = 1.41878 - 0.21917I$ $a = -0.808970 - 1.033880I$ $b = 0.427482 - 1.218940I$	$3.33884 - 4.40083I$	$8.22546 + 3.49859I$
$u = 1.41878 - 0.21917I$ $a = -1.37363 - 0.36155I$ $b = 0.228681 - 1.161970I$	$1.26686 - 5.93141I$	$7.25943 + 7.92923I$
$u = 1.41878 - 0.21917I$ $a = 0.307395 + 0.017583I$ $b = -0.982401 - 0.242528I$	$3.33884 - 4.40083I$	$8.22546 + 3.49859I$
$u = 1.41878 - 0.21917I$ $a = -0.0055411 + 0.0806818I$ $b = 0.848456 + 0.805185I$	6.81032	$11.48863 + 0.I$

IV.

$\boldsymbol{I_4^u = \langle u^{15} - 2u^{14} + \cdots + b + 2,\ -u^{14} + u^{13} + \cdots + a + 3,\ u^{16} - 9u^{14} + \cdots - 4u^2 + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{14} - u^{13} + \cdots + 10u^2 - 3 \\ -u^{15} + 2u^{14} + \cdots + 9u^2 - 2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{15} - u^{14} + \cdots + u^2 - 1 \\ -u^{15} + 2u^{14} + \cdots + 9u^2 - 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^{14} - u^{13} + \cdots - u + 2 \\ u^{13} - 7u^{11} + \cdots + 3u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^{15} - u^{14} + \cdots - 3u + 1 \\ 2u^{15} - 2u^{14} + \cdots - u + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{14} + 8u^{12} + \cdots - 12u^2 + 2 \\ u^{13} - 7u^{11} + \cdots + 2u - 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^{13} + 7u^{11} - u^{10} - 18u^9 + 4u^8 + 21u^7 - 4u^6 - 12u^5 + 2u^3 + u^2 + 3u \\ -u^{15} + 2u^{14} + \cdots + 3u - 2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^{13} + 7u^{11} - u^{10} - 18u^9 + 4u^8 + 21u^7 - 4u^6 - 12u^5 + 2u^3 + u^2 + 3u \\ -u^{15} + 2u^{14} + \cdots + 3u - 2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^{15} - 5u^{14} - 11u^{13} + 38u^{12} + 42u^{11} - 112u^{10} - 77u^9 + 161u^8 + 82u^7 - 122u^6 - 63u^5 + 48u^4 + 28u^3 + 2u + 5$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_8	$u^{16} + 8u^{14} + \cdots - u + 1$
c_2, c_6	$u^{16} + 8u^{14} + \cdots + u + 1$
c_3	$u^{16} + 3u^{15} + \cdots + 5u^2 + 1$
c_4, c_7	$u^{16} - 3u^{13} - u^{12} - u^{11} + 8u^8 + 2u^7 + 6u^6 + 3u^5 + 10u^4 + 3u^2 + 1$
c_5	$u^{16} - 9u^{14} + \cdots - 4u^2 + 1$
c_9, c_{10}	$u^{16} - 9u^{14} + \cdots - 4u^2 + 1$
c_{11}	$u^{16} - 3u^{15} + \cdots + 5u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6 c_8	$y^{16} + 16y^{15} + \cdots + 13y + 1$
c_3, c_{11}	$y^{16} + 7y^{15} + \cdots + 10y + 1$
c_4, c_7	$y^{16} - 2y^{14} + \cdots + 6y + 1$
c_5, c_9, c_{10}	$y^{16} - 18y^{15} + \cdots - 8y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.932576 + 0.558604I$ $a = 0.83677 - 1.43673I$ $b = -0.031814 - 0.697076I$	$-2.00312 + 2.11071I$	$-0.36261 + 5.84578I$
$u = 0.932576 - 0.558604I$ $a = 0.83677 + 1.43673I$ $b = -0.031814 + 0.697076I$	$-2.00312 - 2.11071I$	$-0.36261 - 5.84578I$
$u = -0.758635 + 0.439917I$ $a = -0.543641 - 0.719000I$ $b = 0.033972 - 1.283280I$	$-4.35479 - 2.08547I$	$2.28739 + 3.71145I$
$u = -0.758635 - 0.439917I$ $a = -0.543641 + 0.719000I$ $b = 0.033972 + 1.283280I$	$-4.35479 + 2.08547I$	$2.28739 - 3.71145I$
$u = -1.270170 + 0.042100I$ $a = -0.117828 - 1.114430I$ $b = -0.13344 - 1.70790I$	$-1.36561 + 1.03179I$	$13.09233 + 0.83056I$
$u = -1.270170 - 0.042100I$ $a = -0.117828 + 1.114430I$ $b = -0.13344 + 1.70790I$	$-1.36561 - 1.03179I$	$13.09233 - 0.83056I$
$u = 1.299950 + 0.158892I$ $a = -1.49957 + 0.33616I$ $b = 0.717514 + 0.694169I$	$4.26074 + 5.75964I$	$11.30648 - 7.65537I$
$u = 1.299950 - 0.158892I$ $a = -1.49957 - 0.33616I$ $b = 0.717514 - 0.694169I$	$4.26074 - 5.75964I$	$11.30648 + 7.65537I$
$u = 1.44241 + 0.18942I$ $a = 0.942839 - 0.151798I$ $b = -0.559613 - 1.118820I$	$1.52375 + 4.32708I$	$9.46348 - 3.89019I$
$u = 1.44241 - 0.18942I$ $a = 0.942839 + 0.151798I$ $b = -0.559613 + 1.118820I$	$1.52375 - 4.32708I$	$9.46348 + 3.89019I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.389768 + 0.361348I$ $a = -1.42793 - 0.61604I$ $b = 0.199143 - 1.346600I$	$-4.35506 - 1.95343I$	$2.10403 + 1.81382I$
$u = -0.389768 - 0.361348I$ $a = -1.42793 + 0.61604I$ $b = 0.199143 + 1.346600I$	$-4.35506 + 1.95343I$	$2.10403 - 1.81382I$
$u = 0.380311 + 0.321242I$ $a = -1.37704 + 2.58113I$ $b = -0.462275 + 0.600749I$	$1.00222 - 3.96560I$	$4.29089 + 5.86867I$
$u = 0.380311 - 0.321242I$ $a = -1.37704 - 2.58113I$ $b = -0.462275 - 0.600749I$	$1.00222 + 3.96560I$	$4.29089 - 5.86867I$
$u = -1.63668 + 0.04505I$ $a = 0.186402 + 0.341093I$ $b = 0.236509 + 0.446950I$	$8.58175 + 2.59504I$	$15.8180 + 1.0523I$
$u = -1.63668 - 0.04505I$ $a = 0.186402 - 0.341093I$ $b = 0.236509 - 0.446950I$	$8.58175 - 2.59504I$	$15.8180 - 1.0523I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_8	$(u^{10}+2u^9+\cdots+8u+17)(u^{16}+8u^{14}+\cdots-u+1)$ $\cdot(u^{26}+7u^{24}+\cdots+3u-1)(u^{40}-u^{39}+\cdots+112u+32)$
c_2, c_6	$(u^{10}+2u^9+\cdots+8u+17)(u^{16}+8u^{14}+\cdots+u+1)$ $\cdot(u^{26}+7u^{24}+\cdots+3u-1)(u^{40}-u^{39}+\cdots+112u+32)$
c_3	$((u^5+u^4+2u^3+u^2+u+1)^{10})(u^{16}+3u^{15}+\cdots+5u^2+1)$ $\cdot(u^{26}-12u^{25}+\cdots-448u+32)$
c_4, c_7	$(u^{10}+2u^9+3u^8+4u^6+15u^4-16u^3+33u^2-20u+7)$ $\cdot(u^{16}-3u^{13}-u^{12}-u^{11}+8u^8+2u^7+6u^6+3u^5+10u^4+3u^2+1)$ $\cdot(u^{26}-9u^{24}+\cdots-16u^2-1)(u^{40}-7u^{39}+\cdots+80u+32)$
c_5	$((u^5-u^4-2u^3+u^2+u+1)^{10})(u^{16}-9u^{14}+\cdots-4u^2+1)$ $\cdot(u^{26}+11u^{25}+\cdots+16u-32)$
c_9, c_{10}	$((u^5-u^4-2u^3+u^2+u+1)^{10})(u^{16}-9u^{14}+\cdots-4u^2+1)$ $\cdot(u^{26}+11u^{25}+\cdots+16u-32)$
c_{11}	$((u^5+u^4+2u^3+u^2+u+1)^{10})(u^{16}-3u^{15}+\cdots+5u^2+1)$ $\cdot(u^{26}-12u^{25}+\cdots-448u+32)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6 c_8	$(y^{10} + 6y^9 + \cdots + 786y + 289)(y^{16} + 16y^{15} + \cdots + 13y + 1)$ $\cdot (y^{26} + 14y^{25} + \cdots - y + 1)(y^{40} + 29y^{39} + \cdots + 8960y + 1024)$
c_3, c_{11}	$((y^5 + 3y^4 + 4y^3 + y^2 - y - 1)^{10})(y^{16} + 7y^{15} + \cdots + 10y + 1)$ $\cdot (y^{26} + 10y^{25} + \cdots - 27136y + 1024)$
c_4, c_7	$(y^{10} + 2y^9 + \cdots + 62y + 49)(y^{16} - 2y^{14} + \cdots + 6y + 1)$ $\cdot (y^{26} - 18y^{25} + \cdots + 32y + 1)(y^{40} + 5y^{39} + \cdots + 9984y + 1024)$
c_5, c_9, c_{10}	$((y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)^{10})(y^{16} - 18y^{15} + \cdots - 8y + 1)$ $\cdot (y^{26} - 23y^{25} + \cdots - 5888y + 1024)$