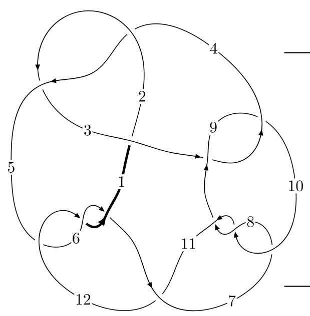
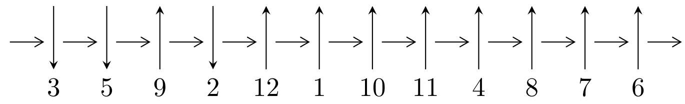
$12a_{0167}$ ($K12a_{0167}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

[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`).

$$
\begin{aligned}
I_1^u = \langle &-179878036u^{22} - 223200067u^{21} + \cdots + 15409974654d - 115530422,\\
&487430093u^{22} + 2626639316u^{21} + \cdots + 184919695848c - 182635192736,\\
&6729099212u^{22} + 11896606493u^{21} + \cdots + 92459847924b + 39193550776,\\
&-321494617u^{22} + 1287799250u^{21} + \cdots + 92459847924a - 91427201564,\\
&u^{23} + 2u^{22} + \cdots - 4u^2 + 8\rangle\\
I_2^u = \langle &u^2c - u^3 - cu + u^2 + d + c - 1,\ -2u^3c + 3u^2c + u^3 + c^2 - 2cu - u^2 + u,\ u^2 + b + 1,\ u^3 - 2u^2 + a + u - 1,\\
&u^4 - 2u^3 + 2u^2 - u + 1\rangle\\
I_3^u = \langle &-u^7 + u^5 - 2u^3 + d + u,\ u^5 + c + u,\ -u^7 - u^6 + u^4 - au + b + 1,\\
&-u^7a + u^7 + 2u^5a + 2u^4a - 2u^5 - 2u^3a - u^4 - 2u^2a + 3u^3 + a^2 + u^2 + 2a - 2,\\
&u^8 + u^7 - u^6 - 2u^5 + u^4 + 2u^3 - 2u - 1\rangle\\
I_4^u = \langle &-u^6 - u^5 + u^4 - u^2a + 2u^3 - au + d - u - 1,\\
&2u^7a + 2u^6a - u^7 - 2u^5a - u^6 - 4u^4a + u^5 + 2u^3a + 3u^4 + 3u^2a - au - 2u^2 + c - 3a - u + 1,\\
&-u^7 - u^6 + u^4 - au + b + 1,\ -u^7a + u^7 + 2u^5a + 2u^4a - 2u^5 - 2u^3a - u^4 - 2u^2a + 3u^3 + a^2 + u^2 + 2a - 2\\
&u^8 + u^7 - u^6 - 2u^5 + u^4 + 2u^3 - 2u - 1\rangle\\
I_5^u = \langle &-u^7 + u^5 - 2u^3 + d + u,\ u^5 + c + u,\ -u^7 - u^6 + 2u^5 + 3u^4 - 2u^3 - 4u^2 + b + 2u + 3,\\
&u^7 - 2u^5 - 2u^4 + 2u^3 + 2u^2 + a - 2u - 2,\ u^8 + u^7 - u^6 - 2u^5 + u^4 + 2u^3 - 2u - 1\rangle\\
I_6^u = \langle &u^5c - u^4c - 2u^3c + 3u^2c + u^3 + cu + d - 2c - u,\\
&-3u^5c - u^4c + u^5 + 5u^3c + u^4 - 3u^2c - 3u^3 + 2c^2 - 5cu + u^2 + 6c + 3u - 4,\ -u^4 + u^2 + b - u - 1,\\
&-u^5 + u^4 + 3u^3 - 3u^2 + 2a - u + 4,\ u^6 - u^5 - u^4 + 3u^3 - u^2 - 2u + 2\rangle
\end{aligned}
$$

$$
\begin{aligned}
I_1^v &= \langle c,\ d-1,\ b,\ a+1,\ v+1\rangle\\
I_2^v &= \langle a,\ d,\ c-1,\ b+1,\ v-1\rangle\\
I_3^v &= \langle a,\ d-1,\ c+a-1,\ b+1,\ v-1\rangle\\
I_4^v &= \langle c,\ d-1,\ av+c+v-1,\ bv+1\rangle
\end{aligned}
$$

* 9 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 86 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

[2]All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I. $I^u_1 = \langle -1.80\times10^{8}u^{22} - 2.23\times10^{8}u^{21} + \cdots + 1.54\times10^{10}d - 1.16\times10^{8},\ 4.87\times10^{8}u^{22} + 2.63\times10^{9}u^{21} + \cdots + 1.85\times10^{11}c - 1.83\times10^{11},\ 6.73\times10^{9}u^{22} + 1.19\times10^{10}u^{21} + \cdots + 9.25\times10^{10}b + 3.92\times10^{10},\ -3.21\times10^{8}u^{22} + 1.29\times10^{9}u^{21} + \cdots + 9.25\times10^{10}a - 9.14\times10^{10},\ u^{23} + 2u^{22} + \cdots - 4u^2 + 8\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.00263590u^{22} - 0.0142042u^{21} + \cdots - 0.0222392u + 0.987646 \\ 0.0116728u^{22} + 0.0144841u^{21} + \cdots - 0.162782u + 0.00749712 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.00263590u^{22} - 0.0142042u^{21} + \cdots - 0.0222392u + 0.987646 \\ -0.0165392u^{22} - 0.0250589u^{21} + \cdots + 0.141695u - 0.0789564 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.00347713u^{22} - 0.0139282u^{21} + \cdots - 0.640963u + 0.988831 \\ -0.0727786u^{22} - 0.128668u^{21} + \cdots + 0.850224u - 0.423898 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0160451u^{22} - 0.0132319u^{21} + \cdots - 1.19538u + 0.956887 \\ -0.0853466u^{22} - 0.129364u^{21} + \cdots + 1.40464u - 0.391954 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.0693015u^{22} + 0.142596u^{21} + \cdots - 0.209260u - 0.564933 \\ -0.0853466u^{22} - 0.129364u^{21} + \cdots + 1.40464u - 0.391954 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.0191751u^{22} - 0.0392631u^{21} + \cdots + 0.119456u + 0.908690 \\ 0.0174433u^{22} + 0.0237607u^{21} + \cdots - 0.295096u + 0.0716533 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.0462554u^{22} - 0.0937250u^{21} + \cdots + 0.159204u + 0.719639 \\ 0.0587694u^{22} + 0.0800767u^{21} + \cdots - 0.985189u + 0.264336 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.00173177u^{22} - 0.0155024u^{21} + \cdots - 0.175640u + 0.980343 \\ -0.0358544u^{22} - 0.0587621u^{21} + \cdots + 0.281242u - 0.167964 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{15567855023}{46229923962}u^{22} + \frac{8703838979}{46229923962}u^{21} + \cdots - \frac{168604101146}{23114961981}u + \frac{87470148380}{23114961981}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{23} + 10u^{22} + \cdots + 88u + 16$
c_2, c_4	$u^{23} - 2u^{22} + \cdots + 8u - 4$
c_3, c_9	$u^{23} - 2u^{22} + \cdots + 4u^2 - 8$
c_5, c_6, c_7 c_8, c_{10}, c_{12}	$u^{23} + 2u^{22} + \cdots - u - 1$
c_{11}	$u^{23} - 6u^{22} + \cdots + 64u - 64$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{23} + 6y^{22} + \cdots + 1824y - 256$
c_2, c_4	$y^{23} - 10y^{22} + \cdots + 88y - 16$
c_3, c_9	$y^{23} - 6y^{22} + \cdots + 64y - 64$
c_5, c_6, c_7 c_8, c_{10}, c_{12}	$y^{23} - 24y^{22} + \cdots - 9y - 1$
c_{11}	$y^{23} + 10y^{22} + \cdots - 6144y - 4096$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.758227 + 0.807207I$ $a = -1.18253 + 1.19256I$ $b = -0.21429 - 1.43213I$ $c = 0.632217 + 0.500472I$ $d = -0.591761 + 0.042510I$	$-5.90461 + 1.36538I$	$-0.279938 - 0.826772I$
$u = -0.758227 - 0.807207I$ $a = -1.18253 - 1.19256I$ $b = -0.21429 + 1.43213I$ $c = 0.632217 - 0.500472I$ $d = -0.591761 - 0.042510I$	$-5.90461 - 1.36538I$	$-0.279938 + 0.826772I$
$u = 0.830705 + 0.204801I$ $a = -0.258089 + 0.246069I$ $b = 0.666656 - 1.123170I$ $c = 0.629069 - 0.215069I$ $d = -0.057606 + 0.411947I$	$0.25505 + 3.01929I$	$7.24264 - 9.08374I$
$u = 0.830705 - 0.204801I$ $a = -0.258089 - 0.246069I$ $b = 0.666656 + 1.123170I$ $c = 0.629069 + 0.215069I$ $d = -0.057606 - 0.411947I$	$0.25505 - 3.01929I$	$7.24264 + 9.08374I$
$u = 0.112218 + 1.144740I$ $a = -0.511153 - 0.296391I$ $b = 1.40432 + 0.22505I$ $c = 0.417690 + 0.009308I$ $d = 1.93741 - 0.14856I$	$8.23677 - 2.50119I$	$13.28602 + 3.12140I$
$u = 0.112218 - 1.144740I$ $a = -0.511153 + 0.296391I$ $b = 1.40432 - 0.22505I$ $c = 0.417690 - 0.009308I$ $d = 1.93741 + 0.14856I$	$8.23677 + 2.50119I$	$13.28602 - 3.12140I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.561270 + 1.026650I$ $a = -0.390779 - 1.343850I$ $b = -0.15516 + 1.60423I$ $c = 0.423044 + 0.049165I$ $d = 1.70161 - 0.72226I$	$5.56899 - 4.43236I$	$12.33564 + 2.61344I$
$u = 0.561270 - 1.026650I$ $a = -0.390779 + 1.343850I$ $b = -0.15516 - 1.60423I$ $c = 0.423044 - 0.049165I$ $d = 1.70161 + 0.72226I$	$5.56899 + 4.43236I$	$12.33564 - 2.61344I$
$u = -0.972761 + 0.735330I$ $a = -1.43485 + 0.61545I$ $b = 1.26169 - 1.93679I$ $c = 0.564139 + 0.426386I$ $d = -0.710629 - 0.218537I$	$-5.23569 - 7.16228I$	$1.72036 + 6.58026I$
$u = -0.972761 - 0.735330I$ $a = -1.43485 - 0.61545I$ $b = 1.26169 + 1.93679I$ $c = 0.564139 - 0.426386I$ $d = -0.710629 + 0.218537I$	$-5.23569 + 7.16228I$	$1.72036 - 6.58026I$
$u = -0.701924 + 1.071670I$ $a = -0.21749 + 1.49119I$ $b = -1.06220 - 1.62478I$ $c = 0.415821 - 0.060496I$ $d = 1.71873 + 0.92854I$	$2.90411 + 9.45510I$	$9.09507 - 6.28090I$
$u = -0.701924 - 1.071670I$ $a = -0.21749 - 1.49119I$ $b = -1.06220 + 1.62478I$ $c = 0.415821 + 0.060496I$ $d = 1.71873 - 0.92854I$	$2.90411 - 9.45510I$	$9.09507 + 6.28090I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.324650+0.201985I$ $a=1.23370+0.73880I$ $b=-1.082960+0.067487I$ $c=-2.00719-0.40410I$ $d=2.17756-0.28510I$	$13.75320-2.16453I$	$16.4022+0.8027I$
$u=-1.324650-0.201985I$ $a=1.23370-0.73880I$ $b=-1.082960-0.067487I$ $c=-2.00719+0.40410I$ $d=2.17756+0.28510I$	$13.75320+2.16453I$	$16.4022-0.8027I$
$u=1.140080+0.732610I$ $a=-1.76969-0.67662I$ $b=1.39872+1.26269I$ $c=-1.39259+1.27651I$ $d=1.80476+0.99453I$	$7.42067+10.78250I$	$12.9034-6.4003I$
$u=1.140080-0.732610I$ $a=-1.76969+0.67662I$ $b=1.39872-1.26269I$ $c=-1.39259-1.27651I$ $d=1.80476-0.99453I$	$7.42067-10.78250I$	$12.9034+6.4003I$
$u=1.315590+0.366431I$ $a=0.530331-1.007860I$ $b=-0.511464-0.076354I$ $c=-1.85311+0.68498I$ $d=2.14413+0.51761I$	$12.6616+7.9478I$	$14.6243-6.1519I$
$u=1.315590-0.366431I$ $a=0.530331+1.007860I$ $b=-0.511464+0.076354I$ $c=-1.85311-0.68498I$ $d=2.14413-0.51761I$	$12.6616-7.9478I$	$14.6243+6.1519I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.618010$ $a=\ \ 0.764150$ $b=-1.38261$ $c=\ \ 0.651263$ $d=\ \ 0.286737$	0.841351	11.7320
$u=-1.130850+0.817356I$ $a=-2.01990+0.20234I$ $b=\ \ 1.93555-1.52159I$ $c=-1.24564-1.29190I$ $d=\ \ 1.76222-1.11255I$	$4.3220-16.2949I$	$9.65915+9.61437I$
$u=-1.130850-0.817356I$ $a=-2.01990-0.20234I$ $b=\ \ 1.93555+1.52159I$ $c=-1.24564+1.29190I$ $d=\ \ 1.76222+1.11255I$	$4.3220+16.2949I$	$9.65915-9.61437I$
$u=\ \ 0.237558+0.464767I$ $a=\ \ 1.13837-1.02403I$ $b=\ \ 0.050451-0.233290I$ $c=\ \ 1.090930-0.283409I$ $d=-0.0297983-0.0630426I$	$-1.63449-0.53093I$	$-3.85466+0.92872I$
$u=\ \ 0.237558-0.464767I$ $a=\ \ 1.13837+1.02403I$ $b=\ \ 0.050451+0.233290I$ $c=\ \ 1.090930+0.283409I$ $d=-0.0297983+0.0630426I$	$-1.63449+0.53093I$	$-3.85466-0.92872I$

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^3 + 4u^2 - 8u + 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.070696 + 0.758745I$ $a = -0.192440 - 0.547877I$ $b = -0.429304 + 0.107280I$ $c = 0.451634 - 0.006403I$ $d = 1.47217 + 0.07618I$	$2.21227 + 1.41376I$	$7.79581 - 4.79737I$
$u = -0.070696 + 0.758745I$ $a = -0.192440 - 0.547877I$ $b = -0.429304 + 0.107280I$ $c = 1.36255 + 0.99488I$ $d = 0.149577 + 0.364417I$	$2.21227 + 1.41376I$	$7.79581 - 4.79737I$
$u = -0.070696 - 0.758745I$ $a = -0.192440 + 0.547877I$ $b = -0.429304 - 0.107280I$ $c = 0.451634 + 0.006403I$ $d = 1.47217 - 0.07618I$	$2.21227 - 1.41376I$	$7.79581 + 4.79737I$
$u = -0.070696 - 0.758745I$ $a = -0.192440 + 0.547877I$ $b = -0.429304 - 0.107280I$ $c = 1.36255 - 0.99488I$ $d = 0.149577 - 0.364417I$	$2.21227 - 1.41376I$	$7.79581 + 4.79737I$
$u = 1.070700 + 0.758745I$ $a = 1.69244 + 0.31815I$ $b = -1.57070 - 1.62477I$ $c = 0.529061 - 0.418553I$ $d = -0.819448 + 0.298973I$	$-0.56734 + 11.56320I$	$6.20419 - 8.26147I$
$u = 1.070700 + 0.758745I$ $a = 1.69244 + 0.31815I$ $b = -1.57070 - 1.62477I$ $c = -1.34325 + 1.40703I$ $d = 1.69770 + 1.00765I$	$-0.56734 + 11.56320I$	$6.20419 - 8.26147I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.070700 - 0.758745I$ $a = 1.69244 - 0.31815I$ $b = -1.57070 + 1.62477I$ $c = 0.529061 + 0.418553I$ $d = -0.819448 - 0.298973I$	$-0.56734 - 11.56320I$	$6.20419 + 8.26147I$
$u = 1.070700 - 0.758745I$ $a = 1.69244 - 0.31815I$ $b = -1.57070 + 1.62477I$ $c = -1.34325 - 1.40703I$ $d = 1.69770 - 1.00765I$	$-0.56734 - 11.56320I$	$6.20419 + 8.26147I$

III. $\boldsymbol{I_3^u = \langle -u^7 + u^5 - 2u^3 + d + u,\ u^5 + c + u,\ -u^7 - u^6 + \cdots + b + 1,\ -u^7 a + u^7 + \cdots + 2a - 2,\ u^8 + u^7 + \cdots - 2u - 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^5 - u \\ u^7 - u^5 + 2u^3 - u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^5 - u \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} a \\ u^7 + u^6 - u^4 + au - 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^7 - u^6 + u^5 - u^3 a + 2u^4 - u^2 a - u^2 + a - u \\ 2u^7 + 2u^6 - u^5 + u^3 a - 3u^4 + u^2 a + au + u^2 + u - 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^7 - u^6 + u^4 - au - a + 1 \\ 2u^7 + 2u^6 - u^5 + u^3 a - 3u^4 + u^2 a + au + u^2 + u - 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^3 \\ u^3 - u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^7 - u^5 a + u^6 - u^4 a + u^5 + u^2 a - u^3 + au - 2u^2 + a - u - 1 \\ -2u^7 + u^5 a - 2u^6 + u^4 a - u^3 a + 2u^4 - 2u^2 a + u^3 - au + u^2 + 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7 + 8u^5 + 4u^4 - 8u^3 - 4u^2 + 4u + 14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{16} - 5y^{15} + \cdots - 16y + 1$
c_2, c_4, c_5 c_6, c_{12}	$y^{16} - 9y^{15} + \cdots - 8y^2 + 1$
c_3, c_9	$(y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1)^2$
c_7, c_8, c_{10}	$(y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1)^2$
c_{11}	$(y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.570868+0.730671I$ $a=\quad 0.583515-0.832445I$ $b=-0.234797+1.067950I$ $c=\quad 0.451832-0.055667I$ $d=\quad 1.32053+0.63395I$	$1.04066+1.13123I$	$7.41522-0.51079I$
$u=-0.570868+0.730671I$ $a=-1.063490+0.509555I$ $b=-0.275134-0.901574I$ $c=\quad 0.451832-0.055667I$ $d=\quad 1.32053+0.63395I$	$1.04066+1.13123I$	$7.41522-0.51079I$
$u=-0.570868-0.730671I$ $a=\quad 0.583515+0.832445I$ $b=-0.234797-1.067950I$ $c=\quad 0.451832+0.055667I$ $d=\quad 1.32053-0.63395I$	$1.04066-1.13123I$	$7.41522+0.51079I$
$u=-0.570868-0.730671I$ $a=-1.063490-0.509555I$ $b=-0.275134+0.901574I$ $c=\quad 0.451832+0.055667I$ $d=\quad 1.32053-0.63395I$	$1.04066-1.13123I$	$7.41522+0.51079I$
$u=\quad 0.855237+0.665892I$ $a=\quad 1.003290+0.865096I$ $b=-0.74376-2.19413I$ $c=\quad 0.620212-0.418390I$ $d=-0.547085+0.161596I$	$-2.15941+2.57849I$	$4.27708-3.56796I$
$u=\quad 0.855237+0.665892I$ $a=\quad 1.78504+1.17568I$ $b=-0.28199-1.40795I$ $c=\quad 0.620212-0.418390I$ $d=-0.547085+0.161596I$	$-2.15941+2.57849I$	$4.27708-3.56796I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.855237 - 0.665892I$ $a = 1.003290 - 0.865096I$ $b = -0.74376 + 2.19413I$ $c = 0.620212 + 0.418390I$ $d = -0.547085 - 0.161596I$	$-2.15941 - 2.57849I$	$4.27708 + 3.56796I$
$u = 0.855237 - 0.665892I$ $a = 1.78504 - 1.17568I$ $b = -0.28199 + 1.40795I$ $c = 0.620212 + 0.418390I$ $d = -0.547085 - 0.161596I$	$-2.15941 - 2.57849I$	$4.27708 + 3.56796I$
$u = 1.09818$ $a = -0.558131 + 0.380867I$ $b = 0.612928 + 0.418261I$ $c = -2.69540$ $d = 1.87965$	6.50273	13.8640
$u = 1.09818$ $a = -0.558131 - 0.380867I$ $b = 0.612928 - 0.418261I$ $c = -2.69540$ $d = 1.87965$	6.50273	13.8640
$u = -1.031810 + 0.655470I$ $a = -1.266190 + 0.281077I$ $b = 1.10166 - 1.54556I$ $c = -1.56596 - 1.49295I$ $d = 1.67925 - 0.85124I$	$2.37968 - 6.44354I$	$9.42845 + 5.29417I$
$u = -1.031810 + 0.655470I$ $a = 1.43867 - 0.58398I$ $b = -1.12222 + 1.11997I$ $c = -1.56596 - 1.49295I$ $d = 1.67925 - 0.85124I$	$2.37968 - 6.44354I$	$9.42845 + 5.29417I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.031810 - 0.655470I$ $a = -1.266190 - 0.281077I$ $b = \quad 1.10166 + 1.54556I$ $c = -1.56596 + 1.49295I$ $d = \quad 1.67925 + 0.85124I$	$2.37968 + 6.44354I$	$9.42845 - 5.29417I$
$u = -1.031810 - 0.655470I$ $a = \quad 1.43867 + 0.58398I$ $b = -1.12222 - 1.11997I$ $c = -1.56596 + 1.49295I$ $d = \quad 1.67925 + 0.85124I$	$2.37968 + 6.44354I$	$9.42845 - 5.29417I$
$u = -0.603304$ $a = \quad 0.851522$ $b = -1.62708$ $c = \quad 0.683228$ $d = \quad 0.214962$	0.845036	11.8940
$u = -0.603304$ $a = -2.69694$ $b = \quad 0.513726$ $c = \quad 0.683228$ $d = \quad 0.214962$	0.845036	11.8940

IV. $\boldsymbol{I^u_4 = \langle -u^6 - u^5 + \cdots + d - 1,\ 2u^7a - u^7 + \cdots - 3a + 1,\ -u^7 - u^6 + \cdots + b + 1,\ -u^7a + u^7 + \cdots + 2a - 2,\ u^8 + u^7 + \cdots - 2u - 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -2u^7a + u^7 + \cdots + 3a - 1 \\ u^6 + u^5 - u^4 + u^2a - 2u^3 + au + u + 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -2u^7a + u^7 + \cdots + 3a - 1 \\ -u^4a - u^3a + u^4 + u^3 + au - u^2 - 2u - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} a \\ u^7 + u^6 - u^4 + au - 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^7 - u^6 + u^5 - u^3a + 2u^4 - u^2a - u^2 + a - u \\ 2u^7 + 2u^6 - u^5 + u^3a - 3u^4 + u^2a + au + u^2 + u - 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^7 - u^6 + u^4 - au - a + 1 \\ 2u^7 + 2u^6 - u^5 + u^3a - 3u^4 + u^2a + au + u^2 + u - 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -2u^7a + u^7 + \cdots + 3a - 2 \\ u^6a + u^5a - u^3a + u^2a + au + u^2 + u + 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -2u^7a + u^7 + \cdots + 3a - 2 \\ 2u^6a + u^5a - u^4a - u^3a + u^4 + 2u^2a + u^3 + au + u^2 + 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -2u^7a + u^7 + \cdots + 3a - 1 \\ -u^6a - u^5a - u^4a - au - 2u^2 - a - 2u - 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7 + 8u^5 + 4u^4 - 8u^3 - 4u^2 + 4u + 14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{16} - 5y^{15} + \cdots - 16y + 1$
c_2, c_4, c_7 c_8, c_{10}	$y^{16} - 9y^{15} + \cdots - 8y^2 + 1$
c_3, c_9	$(y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1)^2$
c_5, c_6, c_{12}	$(y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1)^2$
c_{11}	$(y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.570868 + 0.730671I$ $a = 0.583515 - 0.832445I$ $b = -0.234797 + 1.067950I$ $c = 0.755133 + 0.516255I$ $d = -0.371151 + 0.120354I$	$1.04066 + 1.13123I$	$7.41522 - 0.51079I$
$u = -0.570868 + 0.730671I$ $a = -1.063490 + 0.509555I$ $b = -0.275134 - 0.901574I$ $c = -0.64422 - 2.71770I$ $d = 1.050620 - 0.754306I$	$1.04066 + 1.13123I$	$7.41522 - 0.51079I$
$u = -0.570868 - 0.730671I$ $a = 0.583515 + 0.832445I$ $b = -0.234797 - 1.067950I$ $c = 0.755133 - 0.516255I$ $d = -0.371151 - 0.120354I$	$1.04066 - 1.13123I$	$7.41522 + 0.51079I$
$u = -0.570868 - 0.730671I$ $a = -1.063490 - 0.509555I$ $b = -0.275134 + 0.901574I$ $c = -0.64422 + 2.71770I$ $d = 1.050620 + 0.754306I$	$1.04066 - 1.13123I$	$7.41522 + 0.51079I$
$u = 0.855237 + 0.665892I$ $a = 1.003290 + 0.865096I$ $b = -0.74376 - 2.19413I$ $c = 0.450628 + 0.089664I$ $d = 1.10695 - 0.96382I$	$-2.15941 + 2.57849I$	$4.27708 - 3.56796I$
$u = 0.855237 + 0.665892I$ $a = 1.78504 + 1.17568I$ $b = -0.28199 - 1.40795I$ $c = -1.48818 + 1.97913I$ $d = 1.44013 + 0.80222I$	$-2.15941 + 2.57849I$	$4.27708 - 3.56796I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.855237 - 0.665892I$ $a = 1.003290 - 0.865096I$ $b = -0.74376 + 2.19413I$ $c = 0.450628 - 0.089664I$ $d = 1.10695 + 0.96382I$	$-2.15941 - 2.57849I$	$4.27708 + 3.56796I$
$u = 0.855237 - 0.665892I$ $a = 1.78504 - 1.17568I$ $b = -0.28199 + 1.40795I$ $c = -1.48818 - 1.97913I$ $d = 1.44013 - 0.80222I$	$-2.15941 - 2.57849I$	$4.27708 + 3.56796I$
$u = 1.09818$ $a = -0.558131 + 0.380867I$ $b = 0.612928 + 0.418261I$ $c = 0.518512 - 0.196916I$ $d = 0.060177 + 0.877586I$	6.50273	13.8640
$u = 1.09818$ $a = -0.558131 - 0.380867I$ $b = 0.612928 - 0.418261I$ $c = 0.518512 + 0.196916I$ $d = 0.060177 - 0.877586I$	6.50273	13.8640
$u = -1.031810 + 0.655470I$ $a = -1.266190 + 0.281077I$ $b = 1.10166 - 1.54556I$ $c = 0.442044 - 0.109789I$ $d = 0.99859 + 1.19686I$	$2.37968 - 6.44354I$	$9.42845 + 5.29417I$
$u = -1.031810 + 0.655470I$ $a = 1.43867 - 0.58398I$ $b = -1.12222 + 1.11997I$ $c = 0.555142 + 0.391147I$ $d = -0.677840 - 0.345614I$	$2.37968 - 6.44354I$	$9.42845 + 5.29417I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.031810 - 0.655470I$ $a = -1.266190 - 0.281077I$ $b = 1.10166 + 1.54556I$ $c = 0.442044 + 0.109789I$ $d = 0.99859 - 1.19686I$	$2.37968 + 6.44354I$	$9.42845 - 5.29417I$
$u = -1.031810 - 0.655470I$ $a = 1.43867 + 0.58398I$ $b = -1.12222 - 1.11997I$ $c = 0.555142 - 0.391147I$ $d = -0.677840 + 0.345614I$	$2.37968 + 6.44354I$	$9.42845 - 5.29417I$
$u = -0.603304$ $a = 0.851522$ $b = -1.62708$ $c = 0.593814$ $d = 0.467894$	0.845036	11.8940
$u = -0.603304$ $a = -2.69694$ $b = 0.513726$ $c = -6.77192$ $d = 1.31714$	0.845036	11.8940

V. $\boldsymbol{I^u_5 = \langle -u^7 + u^5 - 2u^3 + d + u,\ u^5 + c + u,\ -u^7 - u^6 + \cdots + b + 3,\ u^7 - 2u^5 + \cdots + a - 2,\ u^8 + u^7 + \cdots - 2u - 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^5 - u \\ u^7 - u^5 + 2u^3 - u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^5 - u \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^7 + 2u^5 + 2u^4 - 2u^3 - 2u^2 + 2u + 2 \\ u^7 + u^6 - 2u^5 - 3u^4 + 2u^3 + 4u^2 - 2u - 3 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^6 - 2u^4 + 3u^2 - 2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^6 + u^4 - 2u^2 + 1 \\ u^6 - 2u^4 + 3u^2 - 2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^3 \\ u^3 - u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 2u^6 - 2u^4 + 3u^2 - 1 \\ -2u^6 + 3u^4 - 4u^2 + 2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7 + 8u^5 + 4u^4 - 8u^3 - 4u^2 + 4u + 14$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8+7u^7+19u^6+22u^5+3u^4-14u^3-6u^2+4u+1$
c_2, c_4, c_5 c_6, c_7, c_8 c_{10}, c_{12}	$u^8+u^7-3u^6-2u^5+3u^4+2u-1$
c_3, c_9	$u^8-u^7-u^6+2u^5+u^4-2u^3+2u-1$
c_{11}	$u^8-3u^7+7u^6-10u^5+11u^4-10u^3+6u^2-4u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 - 11y^7 + 59y^6 - 186y^5 + 343y^4 - 370y^3 + 154y^2 - 28y + 1$
c_2, c_4, c_5 c_6, c_7, c_8 c_{10}, c_{12}	$y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1$
c_3, c_9	$y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1$
c_{11}	$y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.570868 + 0.730671I$ $a = -0.66176 + 1.78423I$ $b = 0.32371 - 3.32741I$ $c = 0.451832 - 0.055667I$ $d = 1.32053 + 0.63395I$	$1.04066 + 1.13123I$	$7.41522 - 0.51079I$
$u = -0.570868 - 0.730671I$ $a = -0.66176 - 1.78423I$ $b = 0.32371 + 3.32741I$ $c = 0.451832 + 0.055667I$ $d = 1.32053 - 0.63395I$	$1.04066 - 1.13123I$	$7.41522 + 0.51079I$
$u = 0.855237 + 0.665892I$ $a = -1.077860 - 0.708987I$ $b = 0.771196 + 1.136710I$ $c = 0.620212 - 0.418390I$ $d = -0.547085 + 0.161596I$	$-2.15941 + 2.57849I$	$4.27708 - 3.56796I$
$u = 0.855237 - 0.665892I$ $a = -1.077860 + 0.708987I$ $b = 0.771196 - 1.136710I$ $c = 0.620212 + 0.418390I$ $d = -0.547085 - 0.161596I$	$-2.15941 - 2.57849I$	$4.27708 + 3.56796I$
$u = 1.09818$ $a = 3.31262$ $b = -1.60102$ $c = -2.69540$ $d = 1.87965$	6.50273	13.8640
$u = -1.031810 + 0.655470I$ $a = -2.23610 + 1.61384I$ $b = 0.70316 - 1.76266I$ $c = -1.56596 - 1.49295I$ $d = 1.67925 - 0.85124I$	$2.37968 - 6.44354I$	$9.42845 + 5.29417I$

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.031810 - 0.655470I$ $a = -2.23610 - 1.61384I$ $b = 0.70316 + 1.76266I$ $c = -1.56596 + 1.49295I$ $d = 1.67925 + 0.85124I$	$2.37968 + 6.44354I$	$9.42845 - 5.29417I$
$u = -0.603304$ $a = 0.638815$ $b = -0.995124$ $c = 0.683228$ $d = 0.214962$	0.845036	11.8940

VI. $I_6^u = \langle u^5c - u^4c + \cdots + d - 2c,\ -3u^5c + u^5 + \cdots + 6c - 4,\ -u^4 + u^2 + b - u - 1,\ -u^5 + u^4 + \cdots + 2a + 4,\ u^6 - u^5 + \cdots - 2u + 2\rangle$

(i) Arc colorings

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

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

$$a_8 = \begin{pmatrix} c \\ -u^5c + u^4c + 2u^3c - 3u^2c - u^3 - cu + 2c + u \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} c \\ u^5c - u^4c - 2u^3c + 2u^2c + u^3 + cu - 2c - u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{2}u^5 - \frac{1}{2}u^4 + \cdots + \frac{1}{2}u - 2 \\ u^4 - u^2 + u + 1 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} \frac{1}{2}u^5 - \frac{1}{2}u^4 + \cdots + \frac{1}{2}u^2 - \frac{1}{2}u \\ u^4 - u^3 + 2u - 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1}{2}u^5 - \frac{1}{2}u^4 + \cdots - \frac{3}{2}u + 1 \\ u^4 - u^3 + 2u - 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^5c - u^4c - 2u^3c + 2u^2c + u^3 + cu - c - u \\ 2u^4c - u^5 - 3u^2c + cu + 2c + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^5c + \frac{1}{2}u^5 + \cdots - \frac{1}{2}u - 2 \\ -u^5c + 2u^4c - u^5 + 2u^3c + u^4 - 3u^2c - u^2 + 2c + 2u + 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u^5c + u^4c - u^5 - 2u^3c - u^2c + u^3 + 2cu + c \\ -u^5c + 2u^5 + 3u^3c - 2u^4 - 2u^2c - 2u^3 - 3cu + 3u^2 + 2c - u - 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^5 - 4u^4 + 8u^3 - 8u + 16$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.954425 + 0.469441I$ $a = -1.127640 - 0.295030I$ $b = 0.937752 + 0.810947I$ $c = 0.469359 + 0.113275I$ $d = 0.790687 - 0.984701I$	$4.85214 + 1.71504I$	$13.36090 - 1.32670I$
$u = 0.954425 + 0.469441I$ $a = -1.127640 - 0.295030I$ $b = 0.937752 + 0.810947I$ $c = -2.14493 + 1.61685I$ $d = 1.63274 + 0.58144I$	$4.85214 + 1.71504I$	$13.36090 - 1.32670I$
$u = 0.954425 - 0.469441I$ $a = -1.127640 + 0.295030I$ $b = 0.937752 - 0.810947I$ $c = 0.469359 - 0.113275I$ $d = 0.790687 + 0.984701I$	$4.85214 - 1.71504I$	$13.36090 + 1.32670I$
$u = 0.954425 - 0.469441I$ $a = -1.127640 + 0.295030I$ $b = 0.937752 - 0.810947I$ $c = -2.14493 - 1.61685I$ $d = 1.63274 - 0.58144I$	$4.85214 - 1.71504I$	$13.36090 + 1.32670I$
$u = -1.130290 + 0.224113I$ $a = -0.005338 - 0.454789I$ $b = -0.107958 - 0.512846I$ $c = 0.532539 + 0.254347I$ $d = -0.253448 - 0.772641I$	$6.01369 - 4.89103I$	$12.12173 + 6.59162I$
$u = -1.130290 + 0.224113I$ $a = -0.005338 - 0.454789I$ $b = -0.107958 - 0.512846I$ $c = -2.40888 - 0.66651I$ $d = 1.90853 - 0.29567I$	$6.01369 - 4.89103I$	$12.12173 + 6.59162I$

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.130290-0.224113I$ $a=-0.005338+0.454789I$ $b=-0.107958+0.512846I$ $c=0.532539-0.254347I$ $d=-0.253448+0.772641I$	$6.01369+4.89103I$	$12.12173-6.59162I$
$u=-1.130290-0.224113I$ $a=-0.005338+0.454789I$ $b=-0.107958+0.512846I$ $c=-2.40888+0.66651I$ $d=1.90853+0.29567I$	$6.01369+4.89103I$	$12.12173-6.59162I$
$u=0.675862+0.935235I$ $a=0.632981+1.174050I$ $b=0.67021-1.38548I$ $c=0.623081-0.582789I$ $d=-0.620351-0.230547I$	$-1.81870-5.32947I$	$4.51738+4.54389I$
$u=0.675862+0.935235I$ $a=0.632981+1.174050I$ $b=0.67021-1.38548I$ $c=0.428825+0.061762I$ $d=1.54184-0.84534I$	$-1.81870-5.32947I$	$4.51738+4.54389I$
$u=0.675862-0.935235I$ $a=0.632981-1.174050I$ $b=0.67021+1.38548I$ $c=0.623081+0.582789I$ $d=-0.620351+0.230547I$	$-1.81870+5.32947I$	$4.51738-4.54389I$
$u=0.675862-0.935235I$ $a=0.632981-1.174050I$ $b=0.67021+1.38548I$ $c=0.428825-0.061762I$ $d=1.54184+0.84534I$	$-1.81870+5.32947I$	$4.51738-4.54389I$

VII. $\boldsymbol{I_1^v = \langle c,\ d-1,\ b,\ a+1,\ v+1\rangle}$

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

$a_6 = \begin{pmatrix} -2 \\ 1 \end{pmatrix}$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$		
$a = -1.00000$		
$b = 0$	3.28987	12.0000
$c = 0$		
$d = 1.00000$		

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_5, c_6, c_{12}	$y-1$
c_3, c_7, c_8 c_9, c_{10}, c_{11}	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	0	0
$c =$	1.00000		
$d =$	0		

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

X. $I_4^v = \langle c,\ d-1,\ av+c+v-1,\ bv+1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -a^2 - v^2 - 2a + 7$

(iv) u-Polynomials at the component : It cannot be defined for a positive dimension component.

(v) Riley Polynomials at the component : It cannot be defined for a positive dimension component.

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = \cdots$ $a = \cdots$ $b = \cdots$ $c = \cdots$ $d = \cdots$	1.64493	$10.37261 + 0.05860I$

XI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u-1)^2(u^4+3u^3+5u^2+3u+1)^2$ $\cdot(u^6+2u^5+3u^4+u^3+u^2-u+1)^2$ $\cdot(u^8+7u^7+19u^6+22u^5+3u^4-14u^3-6u^2+4u+1)$ $\cdot((u^{16}+9u^{15}+\cdots-8u^2+1)^2)(u^{23}+10u^{22}+\cdots+88u+16)$
c_2	$u(u-1)^2(u^4-u^3-u^2+u+1)^2(u^6-u^4+u^3+u^2-u+1)^2$ $\cdot(u^8+u^7-3u^6-2u^5+3u^4+2u-1)(u^{16}-u^{15}+\cdots+2u-1)^2$ $\cdot(u^{23}-2u^{22}+\cdots+8u-4)$
c_3, c_9	$u^3(u^4+2u^3+2u^2+u+1)^2(u^6+u^5-u^4-3u^3-u^2+2u+2)^2$ $\cdot((u^8-u^7+\cdots+2u-1)^5)(u^{23}-2u^{22}+\cdots+4u^2-8)$
c_4	$u(u+1)^2(u^4-u^3-u^2+u+1)^2(u^6-u^4+u^3+u^2-u+1)^2$ $\cdot(u^8+u^7-3u^6-2u^5+3u^4+2u-1)(u^{16}-u^{15}+\cdots+2u-1)^2$ $\cdot(u^{23}-2u^{22}+\cdots+8u-4)$
c_5, c_6, c_{12}	$u(u-1)(u+1)(u^8+u^7-3u^6-2u^5+3u^4+2u-1)^3$ $\cdot(u^8+u^7-2u^6-2u^5-u^3+u^2+2u+1)$ $\cdot(u^{12}-5u^{10}+2u^9+9u^8-7u^7-4u^6+7u^5-4u^4+2u^3+u^2-4u+4)$ $\cdot(u^{16}-u^{15}+\cdots+2u-1)(u^{23}+2u^{22}+\cdots-u-1)$
c_7, c_8	$u(u+1)^2(u^8+u^7-3u^6-2u^5+3u^4+2u-1)^3$ $\cdot(u^8+u^7-2u^6-2u^5-u^3+u^2+2u+1)$ $\cdot(u^{12}-5u^{10}+2u^9+9u^8-7u^7-4u^6+7u^5-4u^4+2u^3+u^2-4u+4)$ $\cdot(u^{16}-u^{15}+\cdots+2u-1)(u^{23}+2u^{22}+\cdots-u-1)$
c_{10}	$u(u-1)^2(u^8+u^7-3u^6-2u^5+3u^4+2u-1)^3$ $\cdot(u^8+u^7-2u^6-2u^5-u^3+u^2+2u+1)$ $\cdot(u^{12}-5u^{10}+2u^9+9u^8-7u^7-4u^6+7u^5-4u^4+2u^3+u^2-4u+4)$ $\cdot(u^{16}-u^{15}+\cdots+2u-1)(u^{23}+2u^{22}+\cdots-u-1)$
c_{11}	$u^3(u^4+2u^2+3u+1)^2(u^6-3u^5+5u^4-7u^3+9u^2-8u+4)^2$ $\cdot(u^8-3u^7+7u^6-10u^5+11u^4-10u^3+6u^2-4u+1)^5$ $\cdot(u^{23}-6u^{22}+\cdots+64u-64)$

XII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y-1)^2(y^4+y^3+9y^2+y+1)^2$ $\cdot(y^6+2y^5+7y^4+11y^3+9y^2+y+1)^2$ $\cdot(y^8-11y^7+59y^6-186y^5+343y^4-370y^3+154y^2-28y+1)$ $\cdot((y^{16}-5y^{15}+\cdots-16y+1)^2)(y^{23}+6y^{22}+\cdots+1824y-256)$
c_2, c_4	$y(y-1)^2(y^4-3y^3+5y^2-3y+1)^2$ $\cdot(y^6-2y^5+3y^4-y^3+y^2+y+1)^2$ $\cdot(y^8-7y^7+19y^6-22y^5+3y^4+14y^3-6y^2-4y+1)$ $\cdot((y^{16}-9y^{15}+\cdots-8y^2+1)^2)(y^{23}-10y^{22}+\cdots+88y-16)$
c_3, c_9	$y^3(y^4+2y^2+3y+1)^2(y^6-3y^5+5y^4-7y^3+9y^2-8y+4)^2$ $\cdot(y^8-3y^7+7y^6-10y^5+11y^4-10y^3+6y^2-4y+1)^5$ $\cdot(y^{23}-6y^{22}+\cdots+64y-64)$
c_5, c_6, c_7 c_8, c_{10}, c_{12}	$y(y-1)^2(y^8-7y^7+19y^6-22y^5+3y^4+14y^3-6y^2-4y+1)^3$ $\cdot(y^8-5y^7+8y^6-10y^4+3y^3+5y^2-2y+1)$ $\cdot(y^{12}-10y^{11}+\cdots-8y+16)(y^{16}-9y^{15}+\cdots-8y^2+1)$ $\cdot(y^{23}-24y^{22}+\cdots-9y-1)$
c_{11}	$y^3(y^4+4y^3+6y^2-5y+1)^2(y^6+y^5+y^4+y^3+9y^2+8y+16)^2$ $\cdot(y^8+5y^7+11y^6+6y^5-17y^4-34y^3-22y^2-4y+1)^5$ $\cdot(y^{23}+10y^{22}+\cdots-6144y-4096)$