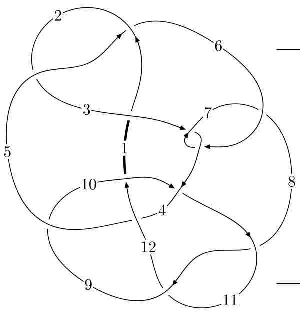
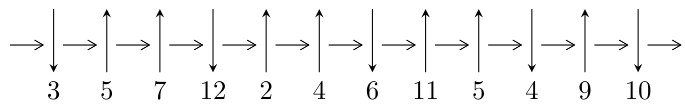
$12n_{0423}$ $(K12n_{0423})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 1231339u^{16} - 5163151u^{15} + \cdots + 19124224b - 5476095, \\
&\quad - 9673313u^{16} + 16707789u^{15} + \cdots + 9562112a - 54216803,\ u^{17} - 2u^{16} + \cdots + 5u + 1\rangle \\
I_2^u &= \langle -3u^3 + u^2 + 4b - 2u - 1,\ -u^3 + u^2 + 2a - 2u + 1,\ u^4 + u^2 + u + 1\rangle \\
I_3^u &= \langle a^4 + a^3u + 2a^2 + au + b + u + 2,\ a^5 - a^4 + 2a^3 - a^2 + a - 1,\ u^2 + 1\rangle \\
I_4^u &= \langle -2048u^9 + 33496u^8 + \cdots + 334809b + 864245, \\
&\quad 535181u^9 - 69173u^8 + \cdots + 5691753a - 2597382, \\
&\quad u^{10} - u^8 + 15u^6 - u^5 + 57u^4 + 7u^3 + 56u^2 + 12u + 17\rangle \\
I_5^u &= \langle u^5 + u^3 - u^2 + b,\ u^5 + 2u^3 - u^2 + a + u - 1,\ u^6 - u^5 + 2u^4 - 2u^3 + 2u^2 - 2u + 1\rangle
\end{aligned}$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 47 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.

$$\boldsymbol{I_1^u = \langle 1.23\times 10^{6}u^{16} - 5.16\times 10^{6}u^{15} + \cdots + 1.91\times 10^{7}b - 5.48\times 10^{6},\ -9.67\times 10^{6}u^{16} + 1.67\times 10^{7}u^{15} + \cdots + 9.56\times 10^{6}a - 5.42\times 10^{7},\ u^{17} - 2u^{16} + \cdots + 5u + 1\rangle}$$

(i) Arc colorings

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

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

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

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

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

$$a_{10} = \begin{pmatrix} 1.01163u^{16} - 1.74729u^{15} + \cdots + 11.6261u + 5.66996 \\ -0.0643864u^{16} + 0.269980u^{15} + \cdots - 1.56569u + 0.286343 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1.01163u^{16} - 1.74729u^{15} + \cdots + 11.6261u + 5.66996 \\ -0.299164u^{16} + 0.733070u^{15} + \cdots - 3.95716u + 0.0103754 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.521430u^{16} - 1.40337u^{15} + \cdots + 2.34977u - 1.07163 \\ 0.297738u^{16} - 0.653196u^{15} + \cdots + 2.42019u + 0.284846 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.0312500u^{15} - 0.0625000u^{14} + \cdots + 0.156250u + 1.03125 \\ -u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.0312500u^{16} - 0.0625000u^{15} + \cdots + 0.156250u^2 + 2.03125u \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.0312500u^{16} - 0.0625000u^{15} + \cdots + 0.156250u^2 + 2.03125u \\ u^5 + u^3 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.874375u^{16} - 1.76166u^{15} + \cdots + 11.3348u + 4.82131 \\ -0.142742u^{16} + 0.397649u^{15} + \cdots - 2.44474u + 0.0854782 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{45218375}{76496896}u^{16} + \frac{24809901}{10928128}u^{15} + \cdots + \frac{290991179}{38248448}u + \frac{522539755}{76496896}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{17}+8u^{15}+\cdots-15u-1$
c_2, c_3, c_5 c_6	$u^{17}+2u^{16}+\cdots+5u-1$
c_4	$u^{17}+6u^{16}+\cdots+12u+4$
c_8, c_{11}	$u^{17}+5u^{16}+\cdots-97u-16$
c_9	$2(2u^{17}-5u^{16}+\cdots+16u+568)$
c_{10}	$2(2u^{17}-7u^{16}+\cdots-6391u+13778)$
c_{12}	$u^{17}-3u^{16}+\cdots-800u+256$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{17} + 16y^{16} + \cdots - 243y - 1$
c_2, c_3, c_5 c_6	$y^{17} + 8y^{15} + \cdots - 15y - 1$
c_4	$y^{17} + 2y^{16} + \cdots - 104y - 16$
c_8, c_{11}	$y^{17} - 25y^{16} + \cdots - 2207y - 256$
c_9	$4(4y^{17} - 145y^{16} + \cdots - 145152y - 322624)$
c_{10}	$4(4y^{17} - 109y^{16} + \cdots - 6.94790 \times 10^8 y - 1.89833 \times 10^8)$
c_{12}	$y^{17} + 39y^{16} + \cdots + 316416y - 65536$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.717924 + 0.486358I$ $a = 0.853936 - 0.745729I$ $b = 0.307111 - 0.292541I$	$1.26458 - 1.13730I$	$3.35116 + 1.82167I$
$u = -0.717924 - 0.486358I$ $a = 0.853936 + 0.745729I$ $b = 0.307111 + 0.292541I$	$1.26458 + 1.13730I$	$3.35116 - 1.82167I$
$u = -0.026424 + 0.757016I$ $a = 0.71710 + 1.42840I$ $b = 0.234197 + 0.550904I$	$3.54267 - 4.48886I$	$11.22908 + 5.05916I$
$u = -0.026424 - 0.757016I$ $a = 0.71710 - 1.42840I$ $b = 0.234197 - 0.550904I$	$3.54267 + 4.48886I$	$11.22908 - 5.05916I$
$u = 0.711308 + 1.176950I$ $a = -0.256063 - 0.466323I$ $b = -0.293782 + 0.033385I$	$-1.05610 + 6.71672I$	$0.12255 - 2.58272I$
$u = 0.711308 - 1.176950I$ $a = -0.256063 + 0.466323I$ $b = -0.293782 - 0.033385I$	$-1.05610 - 6.71672I$	$0.12255 + 2.58272I$
$u = -1.48564$ $a = -2.63464$ $b = -2.25227$	4.37099	-1.92960
$u = 0.051104 + 0.476773I$ $a = -0.70597 - 1.39720I$ $b = -0.525015 - 0.475256I$	$-0.95916 - 1.44555I$	$-0.42899 + 2.81466I$
$u = 0.051104 - 0.476773I$ $a = -0.70597 + 1.39720I$ $b = -0.525015 + 0.475256I$	$-0.95916 + 1.44555I$	$-0.42899 - 2.81466I$
$u = -0.185924 + 0.218364I$ $a = 4.27912 + 0.21207I$ $b = 0.454654 - 0.748287I$	$1.91786 - 0.70287I$	$4.74657 - 1.86210I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.185924 - 0.218364I$ $a = 4.27912 - 0.21207I$ $b = 0.454654 + 0.748287I$	$1.91786 + 0.70287I$	$4.74657 + 1.86210I$
$u = 0.98623 + 1.52887I$ $a = -1.163130 + 0.777324I$ $b = -2.24771 - 0.01624I$	$17.7964 + 14.2831I$	$2.56357 - 5.88484I$
$u = 0.98623 - 1.52887I$ $a = -1.163130 - 0.777324I$ $b = -2.24771 + 0.01624I$	$17.7964 - 14.2831I$	$2.56357 + 5.88484I$
$u = -0.96033 + 1.57079I$ $a = 0.924952 + 0.534960I$ $b = 1.98481 + 0.05465I$	$17.6776 - 6.3252I$	$2.67569 + 2.04454I$
$u = -0.96033 - 1.57079I$ $a = 0.924952 - 0.534960I$ $b = 1.98481 - 0.05465I$	$17.6776 + 6.3252I$	$2.67569 - 2.04454I$
$u = 1.88478 + 0.57916I$ $a = 0.917377 - 0.559017I$ $b = 1.58688 + 0.23145I$	$7.80121 + 3.61191I$	$6.17391 - 2.86781I$
$u = 1.88478 - 0.57916I$ $a = 0.917377 + 0.559017I$ $b = 1.58688 - 0.23145I$	$7.80121 - 3.61191I$	$6.17391 + 2.86781I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{79}{16}u^3 - \frac{85}{16}u^2 - \frac{21}{8}u + \frac{93}{16}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.547424 + 0.585652I$ $a = -0.826150 + 1.069070I$ $b = 0.286541 + 0.697356I$	$2.62503 - 1.39709I$	$9.45081 + 3.47689I$
$u = -0.547424 - 0.585652I$ $a = -0.826150 - 1.069070I$ $b = 0.286541 - 0.697356I$	$2.62503 + 1.39709I$	$9.45081 - 3.47689I$
$u = 0.547424 + 1.120870I$ $a = -0.423850 + 0.307015I$ $b = -0.661541 - 0.046758I$	$-0.98010 + 7.64338I$	$0.08044 - 11.43934I$
$u = 0.547424 - 1.120870I$ $a = -0.423850 - 0.307015I$ $b = -0.661541 + 0.046758I$	$-0.98010 - 7.64338I$	$0.08044 + 11.43934I$

III. $\boldsymbol{I_3^u = \langle a^4 + a^3u + 2a^2 + au + b + u + 2,\ a^5 - a^4 + 2a^3 - a^2 + a - 1,\ u^2 + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4a^3 + 4a^2 - 4a$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -0.339110 + 0.822375I$ $b = -0.331455 - 0.820551I$	$-2.96077 + 1.53058I$	$-3.48489 - 4.43065I$
$u = 1.000000I$ $a = -0.339110 - 0.822375I$ $b = -1.43128 - 1.79928I$	$-2.96077 - 1.53058I$	$-3.48489 + 4.43065I$
$u = 1.000000I$ $a = 0.766826$ $b = -3.52181 - 2.21774I$	-0.888787	-2.51890
$u = 1.000000I$ $a = 0.455697 + 1.200150I$ $b = 0.361438 + 0.927855I$	$2.58269 - 4.40083I$	$0.74431 + 3.49859I$
$u = 1.000000I$ $a = 0.455697 - 1.200150I$ $b = -0.0768928 - 0.0902877I$	$2.58269 + 4.40083I$	$0.74431 - 3.49859I$
$u = -1.000000I$ $a = -0.339110 + 0.822375I$ $b = -1.43128 + 1.79928I$	$-2.96077 + 1.53058I$	$-3.48489 - 4.43065I$
$u = -1.000000I$ $a = -0.339110 - 0.822375I$ $b = -0.331455 + 0.820551I$	$-2.96077 - 1.53058I$	$-3.48489 + 4.43065I$
$u = -1.000000I$ $a = 0.766826$ $b = -3.52181 + 2.21774I$	-0.888787	-2.51890
$u = -1.000000I$ $a = 0.455697 + 1.200150I$ $b = -0.0768928 + 0.0902877I$	$2.58269 - 4.40083I$	$0.74431 + 3.49859I$
$u = -1.000000I$ $a = 0.455697 - 1.200150I$ $b = 0.361438 - 0.927855I$	$2.58269 + 4.40083I$	$0.74431 - 3.49859I$

IV. $I_4^u = \langle -2048u^9 + 33496u^8 + \cdots + 334809b + 864245,\ 5.35 \times 10^5 u^9 - 6.92 \times 10^4 u^8 + \cdots + 5.69 \times 10^6 a - 2.60 \times 10^6,\ u^{10} - u^8 + \cdots + 12u + 17\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.0940274u^9 + 0.0121532u^8 + \cdots - 3.38339u + 0.456341 \\ 0.00611692u^9 - 0.100045u^8 + \cdots + 1.92072u - 2.58131 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.0940274u^9 + 0.0121532u^8 + \cdots - 3.38339u + 0.456341 \\ 0.0534394u^9 - 0.0632629u^8 + \cdots + 3.37335u - 2.78791 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.106750u^9 + 0.00431291u^8 + \cdots - 1.89053u - 0.993144 \\ 0.0711032u^9 - 0.0335863u^8 + \cdots + 3.72600u + 1.69219 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.0137314u^9 - 0.0104298u^8 + \cdots + 0.720925u - 1.04379 \\ -0.00129029u^9 - 0.0413967u^8 + \cdots - 0.108277u + 1.17731 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.0588235u^9 - 0.0588235u^7 + \cdots + 3.29412u + 0.705882 \\ -0.0104298u^9 - 0.00129029u^8 + \cdots - 2.20857u - 0.233435 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.100220u^9 - 0.00518803u^8 + \cdots + 2.10133u + 0.683947 \\ -0.0521491u^9 - 0.00645144u^8 + \cdots - 4.04285u - 0.167173 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.103990u^9 + 0.0138855u^8 + \cdots - 3.10282u + 0.408093 \\ 0.0268153u^9 - 0.0470836u^8 + \cdots + 2.71321u - 1.70339 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{7390}{111603}u^9 + \frac{94492}{111603}u^8 - \frac{1453}{111603}u^7 - \frac{64107}{37201}u^6 + \frac{69416}{111603}u^5 + \frac{533230}{37201}u^4 + \frac{179147}{37201}u^3 + \frac{3799966}{111603}u^2 + \frac{279050}{37201}u + \frac{1780766}{111603}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{10} - 2u^9 + \cdots + 1760u + 289$
c_2, c_3, c_5 c_6	$u^{10} - u^8 + 15u^6 + u^5 + 57u^4 - 7u^3 + 56u^2 - 12u + 17$
c_4	$(u^5 - 2u^4 + 2u^3 + u - 1)^2$
c_8, c_{11}	$(u^5 + 4u^4 + u^3 - 5u^2 + 6u + 1)^2$
c_9	$(u^5 + 8u^4 + 21u^3 + 19u^2 + 2u - 4)^2$
c_{10}	$(u^5 - u^4 + 28u^3 - 4u^2 - 6u - 1)^2$
c_{12}	$(u^5 - u^4 + 17u^3 + 4u^2 + 20u + 8)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{10} + 58y^9 + \cdots - 261932y + 83521$
c_2, c_3, c_5 c_6	$y^{10} - 2y^9 + \cdots + 1760y + 289$
c_4	$(y^5 + 6y^3 + y - 1)^2$
c_8, c_{11}	$(y^5 - 14y^4 + 53y^3 - 21y^2 + 46y - 1)^2$
c_9	$(y^5 - 22y^4 + 141y^3 - 213y^2 + 156y - 16)^2$
c_{10}	$(y^5 + 55y^4 + 764y^3 - 354y^2 + 28y - 1)^2$
c_{12}	$(y^5 + 33y^4 + 337y^3 + 680y^2 + 336y - 64)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.223424 + 1.072270I$ $a = -0.064776 + 0.310879I$ $b = -0.554957 + 1.072270I$	-4.19771	$-7.55749 + 0.I$
$u = 0.223424 - 1.072270I$ $a = -0.064776 - 0.310879I$ $b = -0.554957 - 1.072270I$	-4.19771	$-7.55749 + 0.I$
$u = -0.005641 + 1.186120I$ $a = -0.334630 - 0.830732I$ $b = -1.203510 - 0.040685I$	$-1.58742 - 1.37362I$	$4.55634 + 3.01933I$
$u = -0.005641 - 1.186120I$ $a = -0.334630 + 0.830732I$ $b = -1.203510 + 0.040685I$	$-1.58742 + 1.37362I$	$4.55634 - 3.01933I$
$u = -0.232935 + 0.614344I$ $a = 0.02548 - 1.61663I$ $b = -1.43081 + 1.84114I$	$-1.58742 + 1.37362I$	$4.55634 - 3.01933I$
$u = -0.232935 - 0.614344I$ $a = 0.02548 + 1.61663I$ $b = -1.43081 - 1.84114I$	$-1.58742 - 1.37362I$	$4.55634 + 3.01933I$
$u = 1.84404 + 1.19233I$ $a = 1.26566 - 0.71520I$ $b = 1.93110 - 0.12690I$	$-19.3428 - 4.0569I$	$3.72240 + 1.88627I$
$u = 1.84404 - 1.19233I$ $a = 1.26566 + 0.71520I$ $b = 1.93110 + 0.12690I$	$-19.3428 + 4.0569I$	$3.72240 - 1.88627I$
$u = -1.82889 + 1.22222I$ $a = -1.15643 - 0.87684I$ $b = -1.74183 - 0.09702I$	$-19.3428 - 4.0569I$	$3.72240 + 1.88627I$
$u = -1.82889 - 1.22222I$ $a = -1.15643 + 0.87684I$ $b = -1.74183 + 0.09702I$	$-19.3428 + 4.0569I$	$3.72240 - 1.88627I$

V.

$$\boldsymbol{I^u_5 = \langle u^5+u^3-u^2+b,\ u^5+2u^3-u^2+a+u-1,\ u^6-u^5+2u^4-2u^3+2u^2-2u+1\rangle}$$

(i) Arc colorings

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

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

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

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

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

$$a_{10} = \begin{pmatrix} -u^5-2u^3+u^2-u+1 \\ -u^5-u^3+u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^5-2u^3+u^2-u+1 \\ -2u^5+u^4-2u^3+2u^2-u+1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u^2+1 \\ u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^5+2u^3+u \\ u^5+u^3+u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^5-u^4+2u^3-2u^2+2u-2 \\ u^5+2u^3-u^2+u-1 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -u^5-2u^3+2u^2-u+2 \\ -2u^5+u^4-2u^3+3u^2-u+1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.498832+1.001300I$ $a=-0.713912-0.305839I$ $b=-0.836473+0.439023I$	$1.37919-2.82812I$	$3.30760+3.35914I$
$u=-0.498832-1.001300I$ $a=-0.713912+0.305839I$ $b=-0.836473-0.439023I$	$1.37919+2.82812I$	$3.30760-3.35914I$
$u=0.284920+1.115140I$ $a=-0.284920+1.115140I$ $b=-2.03980+1.11514I$	-2.75839	$2.38480+0.I$
$u=0.284920-1.115140I$ $a=-0.284920-1.115140I$ $b=-2.03980-1.11514I$	-2.75839	$2.38480+0.I$
$u=0.713912+0.305839I$ $a=0.498832-1.001300I$ $b=0.376271-0.256441I$	$1.37919-2.82812I$	$3.30760+3.35914I$
$u=0.713912-0.305839I$ $a=0.498832+1.001300I$ $b=0.376271+0.256441I$	$1.37919+2.82812I$	$3.30760-3.35914I$

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^{10}(u^4-2u^3+3u^2-u+1)(u^6-3u^5+4u^4-2u^3+1)$ $\cdot(u^{10}-2u^9+\cdots+1760u+289)(u^{17}+8u^{15}+\cdots-15u-1)$
c_2, c_3	$(u^2+1)^5(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{10}-u^8+15u^6+u^5+57u^4-7u^3+56u^2-12u+17)$ $\cdot(u^{17}+2u^{16}+\cdots+5u-1)$
c_4	$(u^3+u^2-1)^2(u^4-3u^3+4u^2-3u+2)(u^5-2u^4+2u^3+u-1)^2$ $\cdot(u^{10}+u^8+8u^6+3u^4+3u^2+1)(u^{17}+6u^{16}+\cdots+12u+4)$
c_5, c_6	$(u^2+1)^5(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{10}-u^8+15u^6+u^5+57u^4-7u^3+56u^2-12u+17)$ $\cdot(u^{17}+2u^{16}+\cdots+5u-1)$
c_7	$(u+1)^{10}(u^4+2u^3+3u^2+u+1)(u^6+3u^5+4u^4+2u^3+1)$ $\cdot(u^{10}-2u^9+\cdots+1760u+289)(u^{17}+8u^{15}+\cdots-15u-1)$
c_8	$((u+1)^{10})(u^5-u^4+\cdots+u+1)^2(u^5+4u^4+\cdots+6u+1)^2$ $\cdot(u^{17}+5u^{16}+\cdots-97u-16)$
c_9	$4(u^3-u+1)^2(2u^4+3u^3+4u^2+3u+1)$ $\cdot(u^5+8u^4+21u^3+19u^2+2u-4)^2(u^{10}-3u^8+4u^6-u^4-u^2+1)$ $\cdot(2u^{17}-5u^{16}+\cdots+16u+568)$
c_{10}	$4(u^3-u+1)^2(2u^4+3u^3+4u^2+3u+1)$ $\cdot(u^5-u^4+28u^3-4u^2-6u-1)^2(u^{10}+5u^8+8u^6+3u^4-u^2+1)$ $\cdot(2u^{17}-7u^{16}+\cdots-6391u+13778)$
c_{11}	$((u-1)^{10})(u^5+u^4+\cdots+u-1)^2(u^5+4u^4+\cdots+6u+1)^2$ $\cdot(u^{17}+5u^{16}+\cdots-97u-16)$
c_{12}	$u^{10}(u^5-u^4+2u^3-u^2+u-1)^2(u^5-u^4+17u^3+4u^2+20u+8)^2$ $\cdot(u^{17}-3u^{16}+\cdots-800u+256)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y-1)^{10}(y^4+2y^3+7y^2+5y+1)(y^6-y^5+4y^4-2y^3+8y^2+1)$ $\cdot(y^{10}+58y^9+\cdots-261932y+83521)(y^{17}+16y^{16}+\cdots-243y-1)$
c_2, c_3, c_5 c_6	$(y+1)^{10}(y^4+2y^3+3y^2+y+1)(y^6+3y^5+4y^4+2y^3+1)$ $\cdot(y^{10}-2y^9+\cdots+1760y+289)(y^{17}+8y^{15}+\cdots-15y-1)$
c_4	$(y^3-y^2+2y-1)^2(y^4-y^3+2y^2+7y+4)(y^5+6y^3+y-1)^2$ $\cdot((y^5+y^4+8y^3+3y^2+3y+1)^2)(y^{17}+2y^{16}+\cdots-104y-16)$
c_8, c_{11}	$(y-1)^{10}(y^5-14y^4+53y^3-21y^2+46y-1)^2$ $\cdot((y^5-5y^4+8y^3-3y^2-y-1)^2)(y^{17}-25y^{16}+\cdots-2207y-256)$
c_9	$16(y^3-2y^2+y-1)^2(4y^4+7y^3+2y^2-y+1)$ $\cdot(y^5-22y^4+141y^3-213y^2+156y-16)^2$ $\cdot(y^5-3y^4+4y^3-y^2-y+1)^2$ $\cdot(4y^{17}-145y^{16}+\cdots-145152y-322624)$
c_{10}	$16(y^3-2y^2+y-1)^2(4y^4+7y^3+2y^2-y+1)$ $\cdot(y^5+5y^4+8y^3+3y^2-y+1)^2$ $\cdot(y^5+55y^4+764y^3-354y^2+28y-1)^2$ $\cdot(4y^{17}-109y^{16}+\cdots-694790095y-189833284)$
c_{12}	$y^{10}(y^5+3y^4+4y^3+y^2-y-1)^2$ $\cdot(y^5+33y^4+337y^3+680y^2+336y-64)^2$ $\cdot(y^{17}+39y^{16}+\cdots+316416y-65536)$