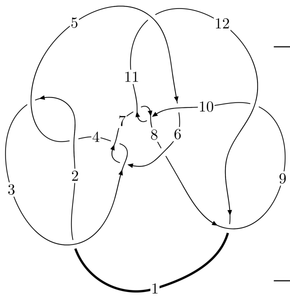
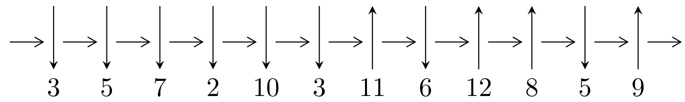
$12n_{0139}$ ($K12n_{0139}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I^u_1 = \langle & 1444693149u^{23} - 2063776507u^{22} + \cdots + 9741443072b + 4111548169, \\
& 7418361699u^{23} - 17994094933u^{22} + \cdots + 19482886144a + 41117831143, \\
& u^{24} - 2u^{23} + \cdots + 4u + 1\rangle \\
I^u_2 = \langle & 8.06000 \times 10^{26}u^{27} + 4.92381 \times 10^{27}u^{26} + \cdots + 6.21532 \times 10^{28}b + 1.24378 \times 10^{29}, \\
& -1.07145 \times 10^{29}u^{27} - 9.17959 \times 10^{29}u^{26} + \cdots + 6.02886 \times 10^{30}a - 5.28882 \times 10^{31}, \\
& u^{28} + 6u^{27} + \cdots + 542u + 97\rangle \\
I^u_3 = \langle & -u^3 - u^2 + 2b - 2u + 1,\ u^3 + 3u^2 + 4a + 2u + 1,\ u^4 + u^2 - u + 1\rangle \\
I^u_4 = \langle & -u^5 - u^3 - u^2 + b - u - 1,\ -u^4 - u^2 + a - u,\ u^6 + u^5 + 2u^4 + 2u^3 + 2u^2 + 2u + 1\rangle \\
I^u_5 = \langle & -91a^2u - 12a^2 + 564au + 337b - 570a + 147u - 188,\ a^3 - 7a^2u - 5a^2 - 4au - a + u - 2,\ u^2 + 1\rangle \\
I^u_6 = \langle & 3b + 4a + 2,\ 4a^2 - 2a - 11,\ u - 1\rangle
\end{aligned}$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 70 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. $\boldsymbol{I^u_1 = \langle 1.44\times10^9u^{23} - 2.06\times10^9u^{22} + \cdots + 9.74\times10^9 b + 4.11\times10^9,\ 7.42\times10^9u^{23} - 1.80\times10^{10}u^{22} + \cdots + 1.95\times10^{10}a + 4.11\times10^{10},\ u^{24} - 2u^{23} + \cdots + 4u + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_3 = \begin{pmatrix} -0.380763u^{23} + 0.923585u^{22} + \cdots + 30.4809u - 2.11046 \\ -0.148304u^{23} + 0.211855u^{22} + \cdots - 1.81073u - 0.422068 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 0.0171864u^{23} + 0.103403u^{22} + \cdots + 13.2528u - 2.04858 \\ -0.192725u^{23} + 0.324632u^{22} + \cdots + 2.24962u + 0.0941446 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.175538u^{23} + 0.428035u^{22} + \cdots + 15.5024u - 1.95444 \\ -0.192725u^{23} + 0.324632u^{22} + \cdots + 2.24962u + 0.0941446 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.000122070u^{23} + 0.000366211u^{22} + \cdots - 3.00037u + 1.99988 \\ -u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.343412u^{23} + 0.752066u^{22} + \cdots + 21.0006u - 1.27837 \\ -0.0361944u^{23} - 0.0124158u^{22} + \cdots - 3.46335u - 0.593642 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.000244141u^{23} - 0.000732422u^{22} + \cdots + 4.00073u - 1.99976 \\ u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.421620u^{23} + 0.978405u^{22} + \cdots + 30.4126u - 2.01569 \\ -0.0958427u^{23} + 0.0837108u^{22} + \cdots - 1.89080u - 0.543727 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.000122070u^{23} + 0.000366211u^{22} + \cdots - 2.00037u + 0.999878 \\ u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{53447126663}{77931544576}u^{23} - \frac{86145029121}{77931544576}u^{22} + \cdots + \frac{1245910362157}{77931544576}u - \frac{821525338933}{77931544576}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{24} + 26u^{23} + \cdots - 7007u + 256$
c_2, c_4	$u^{24} - 6u^{23} + \cdots + u + 16$
c_3, c_6	$u^{24} + 2u^{23} + \cdots - 96u + 256$
c_5	$u^{24} + 6u^{23} + \cdots + 624u + 64$
c_7, c_9, c_{10} c_{12}	$u^{24} - 2u^{23} + \cdots + 4u + 1$
c_8, c_{11}	$4(4u^{24} - 10u^{23} + \cdots + 56u + 8)$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{24} - 50y^{23} + \cdots - 51129153y + 65536$
c_2, c_4	$y^{24} - 26y^{23} + \cdots + 7007y + 256$
c_3, c_6	$y^{24} - 18y^{23} + \cdots - 185344y + 65536$
c_5	$y^{24} + 4y^{23} + \cdots - 69376y + 4096$
c_7, c_9, c_{10} c_{12}	$y^{24} + 24y^{23} + \cdots - 110y + 1$
c_8, c_{11}	$16(16y^{24} - 412y^{23} + \cdots - 64y + 64)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.08185$ $a = -2.32289$ $b = 4.49933$	0.548623	-54.0530
$u = 0.148994 + 0.783883I$ $a = -0.500058 - 0.355404I$ $b = -1.153660 - 0.222767I$	$0.55362 + 3.41152I$	$0.86412 - 8.64734I$
$u = 0.148994 - 0.783883I$ $a = -0.500058 + 0.355404I$ $b = -1.153660 + 0.222767I$	$0.55362 - 3.41152I$	$0.86412 + 8.64734I$
$u = 0.358870 + 1.163880I$ $a = 0.293497 + 0.216350I$ $b = 1.49300 - 0.50044I$	$-0.73599 - 1.30879I$	$-8.68561 - 1.94237I$
$u = 0.358870 - 1.163880I$ $a = 0.293497 - 0.216350I$ $b = 1.49300 + 0.50044I$	$-0.73599 + 1.30879I$	$-8.68561 + 1.94237I$
$u = -0.512568 + 1.179470I$ $a = 0.1243150 + 0.0579838I$ $b = 0.480003 + 0.040159I$	$-3.85211 - 7.19847I$	$-3.15942 + 2.00992I$
$u = -0.512568 - 1.179470I$ $a = 0.1243150 - 0.0579838I$ $b = 0.480003 - 0.040159I$	$-3.85211 + 7.19847I$	$-3.15942 - 2.00992I$
$u = 0.592376 + 0.366960I$ $a = -0.643909 + 0.233654I$ $b = 0.688451 + 0.658630I$	$1.12915 + 1.02062I$	$4.27770 - 4.63248I$
$u = 0.592376 - 0.366960I$ $a = -0.643909 - 0.233654I$ $b = 0.688451 - 0.658630I$	$1.12915 - 1.02062I$	$4.27770 + 4.63248I$
$u = -0.541907$ $a = 2.23521$ $b = -0.103995$	-7.92944	-16.4750

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.05535 + 1.55193I$ $a = -0.211228 + 1.127990I$ $b = -0.858668 + 0.189081I$	$-11.34610 - 0.73612I$	$-10.72969 + 0.24360I$
$u = -0.05535 - 1.55193I$ $a = -0.211228 - 1.127990I$ $b = -0.858668 - 0.189081I$	$-11.34610 + 0.73612I$	$-10.72969 - 0.24360I$
$u = 0.31630 + 1.54928I$ $a = 0.269994 - 1.060220I$ $b = -0.207846 - 0.286463I$	$-19.0579 + 6.6137I$	$-10.93484 - 2.97293I$
$u = 0.31630 - 1.54928I$ $a = 0.269994 + 1.060220I$ $b = -0.207846 + 0.286463I$	$-19.0579 - 6.6137I$	$-10.93484 + 2.97293I$
$u = -0.36560 + 1.55447I$ $a = 0.044155 - 1.334510I$ $b = 1.73078 - 0.39028I$	$-11.7462 - 9.1224I$	$-9.90926 + 4.97595I$
$u = -0.36560 - 1.55447I$ $a = 0.044155 + 1.334510I$ $b = 1.73078 + 0.39028I$	$-11.7462 + 9.1224I$	$-9.90926 - 4.97595I$
$u = -0.21985 + 1.60526I$ $a = -0.227686 - 0.153857I$ $b = -1.58817 - 0.13159I$	$-14.1758 - 4.9325I$	$-11.00051 + 2.57629I$
$u = -0.21985 - 1.60526I$ $a = -0.227686 + 0.153857I$ $b = -1.58817 + 0.13159I$	$-14.1758 + 4.9325I$	$-11.00051 - 2.57629I$
$u = 0.280085 + 0.207328I$ $a = 2.76775 + 0.68817I$ $b = -1.15139 - 0.84730I$	$-1.26399 + 0.69429I$	$-5.88235 + 2.63444I$
$u = 0.280085 - 0.207328I$ $a = 2.76775 - 0.68817I$ $b = -1.15139 + 0.84730I$	$-1.26399 - 0.69429I$	$-5.88235 - 2.63444I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.62229 + 1.54349I$ $a = 0.33089 + 1.38912I$ $b = -2.20818 + 0.76804I$	$19.7035 - 15.6516I$	$-10.07185 + 6.64115I$
$u = -0.62229 - 1.54349I$ $a = 0.33089 - 1.38912I$ $b = -2.20818 - 0.76804I$	$19.7035 + 15.6516I$	$-10.07185 - 6.64115I$
$u = 1.71472$ $a = 1.29940$ $b = -4.00128$	-8.86122	-11.8540
$u = -0.0966119$ $a = -5.95715$ $b = -0.342701$	-0.870307	-11.9670

II. $\boldsymbol{I_2^u = \langle 8.06 \times 10^{26}u^{27} + 4.92 \times 10^{27}u^{26} + \cdots + 6.22 \times 10^{28}b + 1.24 \times 10^{29},\ -1.07 \times 10^{29}u^{27} - 9.18 \times 10^{29}u^{26} + \cdots + 6.03 \times 10^{30}a - 5.29 \times 10^{31},\ u^{28} + 6u^{27} + \cdots + 542u + 97\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.0177720u^{27} + 0.152261u^{26} + \cdots + 51.0589u + 8.77250 \\ -0.0129680u^{27} - 0.0792205u^{26} + \cdots - 10.1162u - 2.00116 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.0199647u^{27} + 0.149393u^{26} + \cdots + 34.2789u + 5.74653 \\ 0.00250162u^{27} - 0.00246621u^{26} + \cdots - 4.44438u - 0.719728 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.0224663u^{27} + 0.146927u^{26} + \cdots + 29.8346u + 5.02680 \\ 0.00250162u^{27} - 0.00246621u^{26} + \cdots - 4.44438u - 0.719728 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.153415u^{27} + 0.834186u^{26} + \cdots - 54.2701u - 12.9847 \\ -0.0420845u^{27} - 0.221294u^{26} + \cdots - 19.3117u - 4.11126 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0235732u^{27} + 0.167215u^{26} + \cdots + 33.8050u + 6.19640 \\ -0.00721990u^{27} - 0.0332133u^{26} + \cdots - 0.910549u - 0.565518 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0217420u^{27} + 0.116081u^{26} + \cdots + 1.22632u + 0.0581123 \\ u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.0203435u^{27} + 0.162178u^{26} + \cdots + 41.7784u + 6.36296 \\ 0.000121206u^{27} - 0.0139096u^{26} + \cdots - 3.57361u - 0.126255 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.128091u^{27} - 0.908242u^{26} + \cdots - 122.754u - 18.4433 \\ 0.0312135u^{27} + 0.163253u^{26} + \cdots + 18.6986u + 3.08220 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.0158847u^{27} - 0.109997u^{26} + \cdots - 3.88785u - 3.25341$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{14}+20u^{13}+\cdots+25u+1)^2$
c_2, c_4	$(u^{14}-4u^{13}+\cdots-u-1)^2$
c_3, c_6	$(u^{14}+u^{13}+\cdots+20u+8)^2$
c_5	$(u^{14}-2u^{13}+\cdots+4u-1)^2$
c_7, c_9, c_{10} c_{12}	$u^{28}+6u^{27}+\cdots+542u+97$
c_8, c_{11}	$u^{28}+2u^{27}+\cdots-12530u+4603$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{14} - 48y^{13} + \cdots - 153y + 1)^2$
c_2, c_4	$(y^{14} - 20y^{13} + \cdots - 25y + 1)^2$
c_3, c_6	$(y^{14} - 21y^{13} + \cdots - 144y + 64)^2$
c_5	$(y^{14} - 6y^{13} + \cdots - 8y + 1)^2$
c_7, c_9, c_{10} c_{12}	$y^{28} + 22y^{27} + \cdots + 47288y + 9409$
c_8, c_{11}	$y^{28} - 22y^{27} + \cdots + 76721028y + 21187609$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.121798 + 1.022010I$ $a = 2.24497 - 1.77780I$ $b = 0.448883$	-4.07000	$-8.52950 + 0.I$
$u = -0.121798 - 1.022010I$ $a = 2.24497 + 1.77780I$ $b = 0.448883$	-4.07000	$-8.52950 + 0.I$
$u = -0.730722 + 0.738022I$ $a = -1.55264 - 0.66750I$ $b = 1.94409 + 0.00042I$	$-6.39368 - 1.41191I$	$-9.87318 + 3.81508I$
$u = -0.730722 - 0.738022I$ $a = -1.55264 + 0.66750I$ $b = 1.94409 - 0.00042I$	$-6.39368 + 1.41191I$	$-9.87318 - 3.81508I$
$u = -0.961372 + 0.440888I$ $a = 1.47427 + 0.61493I$ $b = -1.88899 + 0.49296I$	$-5.27322 - 4.24963I$	$-9.14655 + 5.18533I$
$u = -0.961372 - 0.440888I$ $a = 1.47427 - 0.61493I$ $b = -1.88899 - 0.49296I$	$-5.27322 + 4.24963I$	$-9.14655 - 5.18533I$
$u = 0.778733 + 0.476869I$ $a = -0.560712 + 1.159950I$ $b = 0.091282 + 0.179107I$	$-12.49530 + 2.45847I$	$-7.50081 - 0.42962I$
$u = 0.778733 - 0.476869I$ $a = -0.560712 - 1.159950I$ $b = 0.091282 - 0.179107I$	$-12.49530 - 2.45847I$	$-7.50081 + 0.42962I$
$u = 0.396592 + 1.073210I$ $a = -0.365767 - 0.144675I$ $b = -0.597039 + 0.103194I$	$-0.91573 + 2.69540I$	$0.31936 - 2.88879I$
$u = 0.396592 - 1.073210I$ $a = -0.365767 + 0.144675I$ $b = -0.597039 - 0.103194I$	$-0.91573 - 2.69540I$	$0.31936 + 2.88879I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.014446+1.158610I$ $a=\ 1.74504+1.57039I$ $b=\ 0.620567-0.112346I$	$-3.95002-0.09061I$	$-6.51478+0.23122I$
$u=-0.014446-1.158610I$ $a=\ 1.74504-1.57039I$ $b=\ 0.620567+0.112346I$	$-3.95002+0.09061I$	$-6.51478-0.23122I$
$u=-0.120439+0.677633I$ $a=-0.99346-2.55992I$ $b=\ 0.620567+0.112346I$	$-3.95002+0.09061I$	$-6.51478-0.23122I$
$u=-0.120439-0.677633I$ $a=-0.99346+2.55992I$ $b=\ 0.620567-0.112346I$	$-3.95002-0.09061I$	$-6.51478+0.23122I$
$u=-0.663607+0.149430I$ $a=\ 0.173852+0.543824I$ $b=-0.597039+0.103194I$	$-0.91573+2.69540I$	$0.31936-2.88879I$
$u=-0.663607-0.149430I$ $a=\ 0.173852-0.543824I$ $b=-0.597039-0.103194I$	$-0.91573-2.69540I$	$0.31936+2.88879I$
$u=-0.148951+1.396910I$ $a=-0.44526-1.43020I$ $b=\ 0.091282-0.179107I$	$-12.49530-2.45847I$	$-7.50081+0.42962I$
$u=-0.148951-1.396910I$ $a=-0.44526+1.43020I$ $b=\ 0.091282+0.179107I$	$-12.49530+2.45847I$	$-7.50081-0.42962I$
$u=-0.01413+1.43483I$ $a=\ 1.178910-0.382253I$ $b=\ 1.94409-0.00042I$	$-6.39368+1.41191I$	$-9.87318-3.81508I$
$u=-0.01413-1.43483I$ $a=\ 1.178910+0.382253I$ $b=\ 1.94409+0.00042I$	$-6.39368-1.41191I$	$-9.87318+3.81508I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.47648 + 0.13393I$ $a = -1.255590 - 0.017191I$ $b = 2.70698 - 0.92539I$	$-14.4866 - 8.3929I$	$-9.39875 + 4.58852I$
$u = -1.47648 - 0.13393I$ $a = -1.255590 + 0.017191I$ $b = 2.70698 + 0.92539I$	$-14.4866 + 8.3929I$	$-9.39875 - 4.58852I$
$u = 0.23016 + 1.48936I$ $a = -0.53820 - 1.43603I$ $b = -1.88899 - 0.49296I$	$-5.27322 + 4.24963I$	$-9.14655 - 5.18533I$
$u = 0.23016 - 1.48936I$ $a = -0.53820 + 1.43603I$ $b = -1.88899 + 0.49296I$	$-5.27322 - 4.24963I$	$-9.14655 + 5.18533I$
$u = 0.64679 + 1.68867I$ $a = -0.104403 + 1.260500I$ $b = 2.70698 + 0.92539I$	$-14.4866 + 8.3929I$	$-9.39875 - 4.58852I$
$u = 0.64679 - 1.68867I$ $a = -0.104403 - 1.260500I$ $b = 2.70698 - 0.92539I$	$-14.4866 - 8.3929I$	$-9.39875 + 4.58852I$
$u = -0.80033 + 1.70926I$ $a = -0.068025 + 0.960101I$ $b = -3.20267$	-19.1114	$-12.24106 + 0.I$
$u = -0.80033 - 1.70926I$ $a = -0.068025 - 0.960101I$ $b = -3.20267$	-19.1114	$-12.24106 + 0.I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{79}{16}u^3 - \frac{85}{16}u^2 + \frac{21}{8}u - \frac{99}{16}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_3	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.547424 + 0.585652I$ $a = -0.391417 - 0.855136I$ $b = -0.173850 + 1.069070I$	$-0.66484 + 1.39709I$	$-2.54919 - 3.47689I$
$u = 0.547424 - 0.585652I$ $a = -0.391417 + 0.855136I$ $b = -0.173850 - 1.069070I$	$-0.66484 - 1.39709I$	$-2.54919 + 3.47689I$
$u = -0.547424 + 1.120870I$ $a = 0.266417 + 0.460085I$ $b = -0.576150 + 0.307015I$	$-4.26996 - 7.64338I$	$-11.9196 + 11.4393I$
$u = -0.547424 - 1.120870I$ $a = 0.266417 - 0.460085I$ $b = -0.576150 - 0.307015I$	$-4.26996 + 7.64338I$	$-11.9196 - 11.4393I$

IV.

$\boldsymbol{I_4^u = \langle -u^5-u^3-u^2+b-u-1,\ -u^4-u^2+a-u,\ u^6+u^5+2u^4+2u^3+2u^2+2u+1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2u^5-5u^3-2u^2-5u-12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.498832 + 1.001300I$ $a = -0.684695 + 0.494282I$ $b = 0.662359 + 0.562280I$	$-1.91067 + 2.82812I$	$-8.69240 - 3.35914I$
$u = 0.498832 - 1.001300I$ $a = -0.684695 - 0.494282I$ $b = 0.662359 - 0.562280I$	$-1.91067 - 2.82812I$	$-8.69240 + 3.35914I$
$u = -0.284920 + 1.115140I$ $a = -0.50000 + 1.95694I$ $b = -1.32472$	-6.04826	$-9.61520 + 0.I$
$u = -0.284920 - 1.115140I$ $a = -0.50000 - 1.95694I$ $b = -1.32472$	-6.04826	$-9.61520 + 0.I$
$u = -0.713912 + 0.305839I$ $a = -0.315305 - 0.494282I$ $b = 0.662359 + 0.562280I$	$-1.91067 + 2.82812I$	$-8.69240 - 3.35914I$
$u = -0.713912 - 0.305839I$ $a = -0.315305 + 0.494282I$ $b = 0.662359 - 0.562280I$	$-1.91067 - 2.82812I$	$-8.69240 + 3.35914I$

V.
$\boldsymbol{I_5^u = \langle -91a^2u+564au+\cdots-570a-188,\ a^3-7a^2u-5a^2-4au-a+u-2,\ u^2+1\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} a \\ 0.270030a^2u - 1.67359au + \cdots + 1.69139a + 0.557864 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.0207715a^2u - 0.486647au + \cdots + 0.0237389a - 0.504451 \\ 0.121662a^2u - 0.721068au + \cdots + 0.718101a + 0.240356 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.100890a^2u - 1.20772au + \cdots + 0.741840a - 0.264095 \\ 0.121662a^2u - 0.721068au + \cdots + 0.718101a + 0.240356 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.136499a^2u - 0.516320au + \cdots + 0.415430a + 0.172107 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.0207715a^2u - 0.486647au + \cdots + 0.0237389a - 0.504451 \\ 0.121662a^2u - 0.721068au + \cdots + 0.718101a + 0.240356 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.270030a^2u - 1.67359au + \cdots + 2.69139a + 0.557864 \\ 0.270030a^2u - 1.67359au + \cdots + 1.69139a + 0.557864 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.201780a^2u + 0.415430au + \cdots + 0.516320a + 0.528190 \\ -1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{56}{337}a^2u - \frac{200}{337}a^2 + \frac{1312}{337}au + \frac{1284}{337}a + \frac{428}{337}u - \frac{2684}{337}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$(u^3 - u^2 + 2u - 1)^2$
c_2	$(u^3 + u^2 - 1)^2$
c_4	$(u^3 - u^2 + 1)^2$
c_5	$u^6 + 5u^4 + 10u^2 + 1$
c_6	$(u^3 + u^2 + 2u + 1)^2$
c_7, c_9, c_{10} c_{12}	$(u^2 + 1)^3$
c_8	$u^6 - 4u^5 + 8u^4 + 28u^3 + 36u^2 + 24u + 8$
c_{11}	$u^6 + 4u^5 + 8u^4 - 28u^3 + 36u^2 - 24u + 8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_6	$(y^3 + 3y^2 + 2y - 1)^2$
c_2, c_4	$(y^3 - y^2 + 2y - 1)^2$
c_5	$(y^3 + 5y^2 + 10y + 1)^2$
c_7, c_9, c_{10} c_{12}	$(y + 1)^6$
c_8, c_{11}	$y^6 + 360y^4 + 80y^2 + 64$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -0.567321 - 0.459293I$ $b = -1.307140 - 0.215080I$	$-0.26574 + 2.82812I$	$-8.49024 - 2.97945I$
$u = 1.000000I$ $a = 0.163008 + 0.300102I$ $b = 1.307140 - 0.215080I$	$-0.26574 - 2.82812I$	$-8.49024 + 2.97945I$
$u = 1.000000I$ $a = 5.40431 + 7.15919I$ $b = - 0.569840I$	-4.40332	$-15.0195 + 0.I$
$u = - 1.000000I$ $a = -0.567321 + 0.459293I$ $b = -1.307140 + 0.215080I$	$-0.26574 - 2.82812I$	$-8.49024 + 2.97945I$
$u = - 1.000000I$ $a = 0.163008 - 0.300102I$ $b = 1.307140 + 0.215080I$	$-0.26574 + 2.82812I$	$-8.49024 - 2.97945I$
$u = - 1.000000I$ $a = 5.40431 - 7.15919I$ $b = 0.569840I$	-4.40332	$-15.0195 + 0.I$

VI. $I_6^u = \langle 3b + 4a + 2,\ 4a^2 - 2a - 11,\ u - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{15}{2}a + 7$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^2 - 7y + 1$
c_2, c_3, c_4 c_6	$y^2 - 3y + 1$
c_5	y^2
c_7, c_9, c_{10} c_{12}	$(y-1)^2$
c_8, c_{11}	$16(16y^2 - 28y + 1)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -1.42705$ $b = 1.23607$	-7.23771	-3.70290
$u = 1.00000$ $a = 1.92705$ $b = -3.23607$	0.657974	21.4530

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^{10}(u^2-3u+1)(u^3-u^2+2u-1)^2$ $\cdot((u^{14}+20u^{13}+\cdots+25u+1)^2)(u^{24}+26u^{23}+\cdots-7007u+256)$
c_2	$((u-1)^{10})(u^2+u-1)(u^3+u^2-1)^2(u^{14}-4u^{13}+\cdots-u-1)^2$ $\cdot(u^{24}-6u^{23}+\cdots+u+16)$
c_3	$u^{10}(u^2+u-1)(u^3-u^2+2u-1)^2(u^{14}+u^{13}+\cdots+20u+8)^2$ $\cdot(u^{24}+2u^{23}+\cdots-96u+256)$
c_4	$((u+1)^{10})(u^2-u-1)(u^3-u^2+1)^2(u^{14}-4u^{13}+\cdots-u-1)^2$ $\cdot(u^{24}-6u^{23}+\cdots+u+16)$
c_5	$u^2(u^3-u^2+1)^2(u^4+3u^3+4u^2+3u+2)(u^6+5u^4+10u^2+1)$ $\cdot((u^{14}-2u^{13}+\cdots+4u-1)^2)(u^{24}+6u^{23}+\cdots+624u+64)$
c_6	$u^{10}(u^2-u-1)(u^3+u^2+2u+1)^2(u^{14}+u^{13}+\cdots+20u+8)^2$ $\cdot(u^{24}+2u^{23}+\cdots-96u+256)$
c_7, c_9	$((u+1)^2)(u^2+1)^3(u^4+u^2+u+1)(u^6-u^5+\cdots-2u+1)$ $\cdot(u^{24}-2u^{23}+\cdots+4u+1)(u^{28}+6u^{27}+\cdots+542u+97)$
c_8	$16(4u^2+6u+1)(u^4+2u^3+3u^2+u+1)$ $\cdot(u^6-4u^5+\cdots+24u+8)(u^6+3u^5+4u^4+2u^3+1)$ $\cdot(4u^{24}-10u^{23}+\cdots+56u+8)(u^{28}+2u^{27}+\cdots-12530u+4603)$
c_{10}, c_{12}	$((u-1)^2)(u^2+1)^3(u^4+u^2-u+1)(u^6+u^5+\cdots+2u+1)$ $\cdot(u^{24}-2u^{23}+\cdots+4u+1)(u^{28}+6u^{27}+\cdots+542u+97)$
c_{11}	$16(4u^2-6u+1)(u^4+2u^3+\cdots+u+1)(u^6+3u^5+\cdots+2u^3+1)$ $\cdot(u^6+4u^5+\cdots-24u+8)(4u^{24}-10u^{23}+\cdots+56u+8)$ $\cdot(u^{28}+2u^{27}+\cdots-12530u+4603)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)^{10}(y^2-7y+1)(y^3+3y^2+2y-1)^2$ $\cdot(y^{14}-48y^{13}+\cdots-153y+1)^2$ $\cdot(y^{24}-50y^{23}+\cdots-51129153y+65536)$
c_2, c_4	$(y-1)^{10}(y^2-3y+1)(y^3-y^2+2y-1)^2$ $\cdot((y^{14}-20y^{13}+\cdots-25y+1)^2)(y^{24}-26y^{23}+\cdots+7007y+256)$
c_3, c_6	$y^{10}(y^2-3y+1)(y^3+3y^2+2y-1)^2(y^{14}-21y^{13}+\cdots-144y+64)^2$ $\cdot(y^{24}-18y^{23}+\cdots-185344y+65536)$
c_5	$y^2(y^3-y^2+2y-1)^2(y^3+5y^2+10y+1)^2(y^4-y^3+2y^2+7y+4)$ $\cdot((y^{14}-6y^{13}+\cdots-8y+1)^2)(y^{24}+4y^{23}+\cdots-69376y+4096)$
c_7, c_9, c_{10} c_{12}	$((y-1)^2)(y+1)^6(y^4+2y^3+\cdots+y+1)(y^6+3y^5+\cdots+2y^3+1)$ $\cdot(y^{24}+24y^{23}+\cdots-110y+1)(y^{28}+22y^{27}+\cdots+47288y+9409)$
c_8, c_{11}	$256(16y^2-28y+1)(y^4+2y^3+\cdots+5y+1)(y^6+360y^4+80y^2+64)$ $\cdot(y^6-y^5+4y^4-2y^3+8y^2+1)(16y^{24}-412y^{23}+\cdots-64y+64)$ $\cdot(y^{28}-22y^{27}+\cdots+76721028y+21187609)$