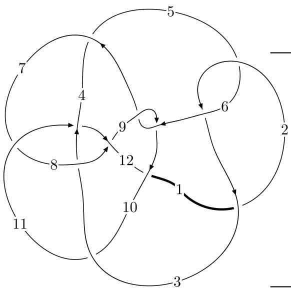
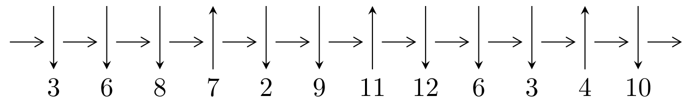
$12n_{0538}$ ($K12n_{0538}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & b - u,\ -1.88153 \times 10^{15} u^{21} - 8.14124 \times 10^{14} u^{20} + \cdots + 7.04162 \times 10^{15} a - 1.77167 \times 10^{16}, \\
& u^{22} + u^{21} + \cdots - u - 1 \rangle \\
I_2^u = \langle & 3.24728 \times 10^{55} u^{29} + 4.53015 \times 10^{55} u^{28} + \cdots + 1.62069 \times 10^{57} b + 2.03912 \times 10^{58}, \\
& - 4.46743 \times 10^{57} u^{29} - 5.44501 \times 10^{57} u^{28} + \cdots + 9.44863 \times 10^{59} a - 4.18593 \times 10^{60}, \\
& u^{30} + 2u^{29} + \cdots + 4496u + 583 \rangle \\
I_3^u = \langle & b + u,\ -2u^{10} - 10u^9 - 13u^8 + 10u^7 + 31u^6 + 4u^5 - 27u^4 - 5u^3 + 17u^2 + a + 5u - 4, \\
& u^{11} + 4u^{10} + 2u^9 - 9u^8 - 8u^7 + 9u^6 + 9u^5 - 7u^4 - 6u^3 + 3u^2 + 2u - 1 \rangle \\
I_4^u = \langle & b + 1,\ u^2 + a - u,\ u^3 - u - 1 \rangle \\
I_5^u = \langle & a^2 + b + 1,\ a^3 + a^2 + 2a + 1,\ u - 1 \rangle \\
I_6^u = \langle & b + 1,\ a^3 + a^2 + 2a + 1,\ u - 1 \rangle
\end{aligned}$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 72 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. $I_1^u = \langle b - u,\ -1.88 \times 10^{15} u^{21} - 8.14 \times 10^{14} u^{20} + \cdots + 7.04 \times 10^{15} a - 1.77 \times 10^{16},\ u^{22} + u^{21} + \cdots - u - 1 \rangle$

(i) Arc colorings

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

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

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

$$a_9 = \begin{pmatrix} 0.267202u^{21} + 0.115616u^{20} + \cdots + 5.41231u + 2.51601 \\ u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.617336u^{21} + 0.765365u^{20} + \cdots - 1.29850u + 1.66021 \\ 0.155989u^{21} + 0.149710u^{20} + \cdots + 0.884384u + 0.151586 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.267202u^{21} + 0.115616u^{20} + \cdots + 5.41231u + 2.51601 \\ -0.155989u^{21} - 0.149710u^{20} + \cdots + 1.11562u - 0.151586 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.267202u^{21} + 0.115616u^{20} + \cdots + 4.41231u + 2.51601 \\ -0.155989u^{21} - 0.149710u^{20} + \cdots + 1.11562u - 0.151586 \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} -0.322075u^{21} - 0.212786u^{20} + \cdots - 6.89909u - 3.09806 \\ -0.193421u^{21} - 0.0467415u^{20} + \cdots - 0.323268u - 0.397732 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.305894u^{21} + 0.558047u^{20} + \cdots - 0.813238u + 1.19414 \\ -0.124057u^{21} - 0.268999u^{20} + \cdots + 0.865623u + 0.408142 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.536796u^{21} + 0.450130u^{20} + \cdots + 6.96025u + 3.15781 \\ -0.105547u^{21} - 0.0829132u^{20} + \cdots + 1.39238u + 0.00872824 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= \frac{2868088365347525}{4694410161939152}u^{21} - \frac{18112778300119}{586801270242394}u^{20} + \cdots - \frac{981896352987059}{586801270242394}u - \frac{17835381551211165}{4694410161939152}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{22} + 33u^{21} + \cdots - 15u + 1$
c_2, c_5, c_{10}	$u^{22} + u^{21} + \cdots - u - 1$
c_3, c_8	$u^{22} + u^{21} + \cdots + 5u + 1$
c_4	$u^{22} + 2u^{21} + \cdots - 126u + 103$
c_6, c_9	$u^{22} - 10u^{21} + \cdots - 80u + 16$
c_7	$u^{22} + u^{21} + \cdots + 36u + 8$
c_{11}	$u^{22} - 13u^{21} + \cdots + 2u + 4$
c_{12}	$u^{22} + 4u^{21} + \cdots - 281u - 83$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{22} - 113y^{21} + \cdots + 107y + 1$
c_2, c_5, c_{10}	$y^{22} - 33y^{21} + \cdots + 15y + 1$
c_3, c_8	$y^{22} - 9y^{21} + \cdots - 25y + 1$
c_4	$y^{22} + 24y^{21} + \cdots + 134916y + 10609$
c_6, c_9	$y^{22} + 6y^{21} + \cdots - 672y + 256$
c_7	$y^{22} + 13y^{21} + \cdots + 368y + 64$
c_{11}	$y^{22} - y^{21} + \cdots - 460y + 16$
c_{12}	$y^{22} - 60y^{21} + \cdots - 67175y + 6889$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.748970 + 0.444444I$ $a = -0.19228 + 1.51718I$ $b = -0.748970 + 0.444444I$	$0.13615 - 1.92714I$	$-10.34642 + 1.92836I$
$u = -0.748970 - 0.444444I$ $a = -0.19228 - 1.51718I$ $b = -0.748970 - 0.444444I$	$0.13615 + 1.92714I$	$-10.34642 - 1.92836I$
$u = -0.130611 + 0.725732I$ $a = -1.39284 - 0.49810I$ $b = -0.130611 + 0.725732I$	$-0.18292 + 6.65611I$	$-5.95007 - 7.18766I$
$u = -0.130611 - 0.725732I$ $a = -1.39284 + 0.49810I$ $b = -0.130611 - 0.725732I$	$-0.18292 - 6.65611I$	$-5.95007 + 7.18766I$
$u = 0.401084 + 0.542056I$ $a = 1.24737 + 1.06824I$ $b = 0.401084 + 0.542056I$	$3.54902 + 1.72435I$	$1.79964 - 0.73697I$
$u = 0.401084 - 0.542056I$ $a = 1.24737 - 1.06824I$ $b = 0.401084 - 0.542056I$	$3.54902 - 1.72435I$	$1.79964 + 0.73697I$
$u = -1.33424$ $a = -0.431084$ $b = -1.33424$	-2.34301	2.73470
$u = -0.056775 + 0.629497I$ $a = 0.785309 - 1.011460I$ $b = -0.056775 + 0.629497I$	$-1.31504 + 2.14729I$	$-8.96814 - 3.55690I$
$u = -0.056775 - 0.629497I$ $a = 0.785309 + 1.011460I$ $b = -0.056775 - 0.629497I$	$-1.31504 - 2.14729I$	$-8.96814 + 3.55690I$
$u = -0.287480 + 0.350556I$ $a = 1.135910 + 0.180293I$ $b = -0.287480 + 0.350556I$	$-0.788001 + 1.021190I$	$-5.92604 - 5.41331I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.287480 - 0.350556I$ $a = 1.135910 - 0.180293I$ $b = -0.287480 - 0.350556I$	$-0.788001 - 1.021190I$	$-5.92604 + 5.41331I$
$u = 0.181344 + 0.303051I$ $a = 1.69533 + 2.92707I$ $b = 0.181344 + 0.303051I$	$0.04653 + 2.94961I$	$-5.40179 + 1.97738I$
$u = 0.181344 - 0.303051I$ $a = 1.69533 - 2.92707I$ $b = 0.181344 - 0.303051I$	$0.04653 - 2.94961I$	$-5.40179 - 1.97738I$
$u = 1.76598$ $a = 0.362139$ $b = 1.76598$	-9.32648	-9.85720
$u = 1.88020 + 0.16813I$ $a = 0.593976 + 0.598808I$ $b = 1.88020 + 0.16813I$	$-13.59180 - 1.67864I$	$-10.72705 - 0.48573I$
$u = 1.88020 - 0.16813I$ $a = 0.593976 - 0.598808I$ $b = 1.88020 - 0.16813I$	$-13.59180 + 1.67864I$	$-10.72705 + 0.48573I$
$u = -1.95173 + 0.18984I$ $a = -0.792024 + 0.526959I$ $b = -1.95173 + 0.18984I$	$-15.4135 - 5.6943I$	$-10.05870 + 3.46761I$
$u = -1.95173 - 0.18984I$ $a = -0.792024 - 0.526959I$ $b = -1.95173 - 0.18984I$	$-15.4135 + 5.6943I$	$-10.05870 - 3.46761I$
$u = 1.97172 + 0.33031I$ $a = 0.661105 + 0.393921I$ $b = 1.97172 + 0.33031I$	$-14.3712 - 6.4475I$	$-12.31821 + 5.34631I$
$u = 1.97172 - 0.33031I$ $a = 0.661105 - 0.393921I$ $b = 1.97172 - 0.33031I$	$-14.3712 + 6.4475I$	$-12.31821 - 5.34631I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.97465 + 0.36872I$ $a = -0.707383 + 0.533233I$ $b = -1.97465 + 0.36872I$	$-14.7419 + 15.2513I$	$-9.04193 - 6.95312I$
$u = -1.97465 - 0.36872I$ $a = -0.707383 - 0.533233I$ $b = -1.97465 - 0.36872I$	$-14.7419 - 15.2513I$	$-9.04193 + 6.95312I$

II. $\boldsymbol{I_2^u = \langle 3.25\times 10^{55}u^{29} + 4.53\times 10^{55}u^{28} + \cdots + 1.62\times 10^{57}b + 2.04\times 10^{58},\ -4.47\times 10^{57}u^{29} - 5.45\times 10^{57}u^{28} + \cdots + 9.45\times 10^{59}a - 4.19\times 10^{60},\ u^{30} + 2u^{29} + \cdots + 4496u + 583\rangle}$

(i) Arc colorings

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

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

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

$$a_9 = \begin{pmatrix} 0.00472813u^{29} + 0.00576275u^{28} + \cdots + 27.0557u + 4.43020 \\ -0.0200364u^{29} - 0.0279520u^{28} + \cdots - 67.4156u - 12.5818 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.00410451u^{29} + 0.0121031u^{28} + \cdots + 6.61203u + 1.98039 \\ 0.00745135u^{29} + 0.0160502u^{28} + \cdots + 0.792830u + 0.0832540 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.00472813u^{29} + 0.00576275u^{28} + \cdots + 27.0557u + 4.43020 \\ -0.0171807u^{29} - 0.0229105u^{28} + \cdots - 53.5661u - 10.4285 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.0247645u^{29} + 0.0337147u^{28} + \cdots + 94.4714u + 17.0120 \\ -0.00141883u^{29} - 0.00143599u^{28} + \cdots - 10.7523u - 3.36205 \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} -0.00504933u^{29} - 0.00945349u^{28} + \cdots - 40.1713u - 6.41129 \\ 0.00262810u^{29} + 0.00887618u^{28} + \cdots - 27.9565u - 3.77015 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.00260386u^{29} + 0.00679584u^{28} + \cdots - 7.78421u + 2.10200 \\ -0.0131077u^{29} - 0.00690705u^{28} + \cdots - 102.987u - 16.3636 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.00606568u^{29} + 0.0116476u^{28} + \cdots + 9.85622u - 0.550040 \\ 0.00608037u^{29} + 0.0164677u^{28} + \cdots - 17.2937u - 1.45033 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.261146u^{29} + 0.287455u^{28} + \cdots + 1402.90u + 219.809$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{30} + 46u^{29} + \cdots + 11608936u + 339889$
c_2, c_5, c_{10}	$u^{30} + 2u^{29} + \cdots + 4496u + 583$
c_3, c_8	$u^{30} + u^{29} + \cdots + 58u - 11$
c_4	$u^{30} + 8u^{29} + \cdots + 2447u + 271$
c_6, c_9	$(u^{15} + 7u^{14} + \cdots + 4u + 1)^2$
c_7	$u^{30} + 3u^{29} + \cdots + 356u + 88$
c_{11}	$(u^{15} + 8u^{14} + \cdots + 5u + 1)^2$
c_{12}	$u^{30} + 2u^{29} + \cdots + 197368u - 32296$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{30} - 50y^{29} + \cdots - 48946220611468y + 115524532321$
c_2, c_5, c_{10}	$y^{30} - 46y^{29} + \cdots - 11608936y + 339889$
c_3, c_8	$y^{30} - 3y^{29} + \cdots - 3056y + 121$
c_4	$y^{30} + 64y^{29} + \cdots - 1263195y + 73441$
c_6, c_9	$(y^{15} - 3y^{14} + \cdots + 36y - 1)^2$
c_7	$y^{30} + 17y^{29} + \cdots + 280176y + 7744$
c_{11}	$(y^{15} + 28y^{13} + \cdots - 9y - 1)^2$
c_{12}	$y^{30} - 22y^{29} + \cdots - 9540868384y + 1043031616$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.733366 + 0.760399I$ $a = -0.932743 + 0.643875I$ $b = -1.086660 + 0.495175I$	$-3.92076 - 0.11084I$	$-19.2470 + 2.6115I$
$u = 0.733366 - 0.760399I$ $a = -0.932743 - 0.643875I$ $b = -1.086660 - 0.495175I$	$-3.92076 + 0.11084I$	$-19.2470 - 2.6115I$
$u = 1.102460 + 0.135538I$ $a = 0.850106 - 0.383862I$ $b = 1.20887 - 1.10475I$	$-4.14672 + 8.45942I$	$-10.28669 - 6.66978I$
$u = 1.102460 - 0.135538I$ $a = 0.850106 + 0.383862I$ $b = 1.20887 + 1.10475I$	$-4.14672 - 8.45942I$	$-10.28669 + 6.66978I$
$u = -0.873450 + 0.022311I$ $a = -0.450314 - 0.183725I$ $b = -1.86355 + 1.25575I$	$-2.83938 + 0.15495I$	$-69.8860 - 16.0941I$
$u = -0.873450 - 0.022311I$ $a = -0.450314 + 0.183725I$ $b = -1.86355 - 1.25575I$	$-2.83938 - 0.15495I$	$-69.8860 + 16.0941I$
$u = -0.965004 + 0.592094I$ $a = 0.798906 + 0.014589I$ $b = 1.027040 + 0.648501I$	$-2.16274 + 2.22327I$	$-10.93751 - 4.89170I$
$u = -0.965004 - 0.592094I$ $a = 0.798906 - 0.014589I$ $b = 1.027040 - 0.648501I$	$-2.16274 - 2.22327I$	$-10.93751 + 4.89170I$
$u = 1.133110 + 0.242313I$ $a = -0.356690 - 1.137480I$ $b = -0.340336 - 0.281341I$	$1.41649 - 4.96313I$	$-5.21468 + 7.56800I$
$u = 1.133110 - 0.242313I$ $a = -0.356690 + 1.137480I$ $b = -0.340336 + 0.281341I$	$1.41649 + 4.96313I$	$-5.21468 - 7.56800I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.086660+0.495175I$ $a=\ 0.812020+0.588181I$ $b=\ 0.733366+0.760399I$	$-3.92076-0.11084I$	$-19.2470+2.6115I$
$u=-1.086660-0.495175I$ $a=\ 0.812020-0.588181I$ $b=\ 0.733366-0.760399I$	$-3.92076+0.11084I$	$-19.2470-2.6115I$
$u=\ 1.027040+0.648501I$ $a=-0.340958+0.662159I$ $b=-0.965004+0.592094I$	$-2.16274+2.22327I$	$-10.93751-4.89170I$
$u=\ 1.027040-0.648501I$ $a=-0.340958-0.662159I$ $b=-0.965004-0.592094I$	$-2.16274-2.22327I$	$-10.93751+4.89170I$
$u=-1.24424$ $a=\ 0.162086$ $b=-0.214799$	-2.25644	3.80230
$u=-0.340336+0.281341I$ $a=\ 2.20884-2.21512I$ $b=\ 1.133110-0.242313I$	$1.41649+4.96313I$	$-5.21468-7.56800I$
$u=-0.340336-0.281341I$ $a=\ 2.20884+2.21512I$ $b=\ 1.133110+0.242313I$	$1.41649-4.96313I$	$-5.21468+7.56800I$
$u=\ 1.20887+1.10475I$ $a=\ 0.572773-0.268684I$ $b=\ 1.102460-0.135538I$	$-4.14672-8.45942I$	$-6.00000+6.66978I$
$u=\ 1.20887-1.10475I$ $a=\ 0.572773+0.268684I$ $b=\ 1.102460+0.135538I$	$-4.14672+8.45942I$	$-6.00000-6.66978I$
$u=-0.214799$ $a=\ 0.938895$ $b=-1.24424$	-2.25644	3.80230

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.81586 + 0.25309I$ $a = -0.879383 - 0.431389I$ $b = -2.13925 - 0.18775I$	$-14.0337 - 3.5387I$	0
$u = 1.81586 - 0.25309I$ $a = -0.879383 + 0.431389I$ $b = -2.13925 + 0.18775I$	$-14.0337 + 3.5387I$	0
$u = 1.88905 + 0.21159I$ $a = -0.720062 - 0.679808I$ $b = -1.91198 - 0.46830I$	$-12.66340 - 6.19285I$	0
$u = 1.88905 - 0.21159I$ $a = -0.720062 + 0.679808I$ $b = -1.91198 + 0.46830I$	$-12.66340 + 6.19285I$	0
$u = -1.91198 + 0.46830I$ $a = 0.773799 - 0.561815I$ $b = 1.88905 - 0.21159I$	$-12.66340 + 6.19285I$	0
$u = -1.91198 - 0.46830I$ $a = 0.773799 + 0.561815I$ $b = 1.88905 + 0.21159I$	$-12.66340 - 6.19285I$	0
$u = -2.13925 + 0.18775I$ $a = 0.731046 - 0.406052I$ $b = 1.81586 - 0.25309I$	$-14.0337 + 3.5387I$	0
$u = -2.13925 - 0.18775I$ $a = 0.731046 + 0.406052I$ $b = 1.81586 + 0.25309I$	$-14.0337 - 3.5387I$	0
$u = -1.86355 + 1.25575I$ $a = -0.109258 - 0.154344I$ $b = -0.873450 + 0.022311I$	$-2.83938 + 0.15495I$	0
$u = -1.86355 - 1.25575I$ $a = -0.109258 + 0.154344I$ $b = -0.873450 - 0.022311I$	$-2.83938 - 0.15495I$	0

III. $\boldsymbol{I_3^u = \langle b+u,\ -2u^{10} - 10u^9 + \cdots + a - 4,\ u^{11} + 4u^{10} + \cdots + 2u - 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 2u^{10} + 10u^9 + \cdots - 5u + 4 \\ -u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 4u^{10} + 17u^9 + \cdots + u + 6 \\ u^{10} + 4u^9 + 3u^8 - 6u^7 - 9u^6 + u^5 + 9u^4 + u^3 - 6u^2 - u + 2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 2u^{10} + 10u^9 + \cdots - 5u + 4 \\ u^{10} + 4u^9 + 3u^8 - 6u^7 - 9u^6 + u^5 + 9u^4 + u^3 - 6u^2 - 3u + 2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 2u^{10} + 10u^9 + \cdots - 4u + 4 \\ u^{10} + 4u^9 + 3u^8 - 6u^7 - 9u^6 + u^5 + 9u^4 + 2u^3 - 6u^2 - 3u + 2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -4u^{10} - 18u^9 + \cdots + 3u - 5 \\ -2u^9 - 7u^8 - u^7 + 16u^6 + 6u^5 - 15u^4 - 4u^3 + 10u^2 + 2u - 2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 3u^{10} + 13u^9 + \cdots - 2u + 6 \\ u^{10} + 5u^9 + 5u^8 - 10u^7 - 16u^6 + 8u^5 + 16u^4 - 5u^3 - 10u^2 + u + 2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 6u^{10} + 25u^9 + \cdots - 4u + 8 \\ 2u^{10} + 8u^9 + 5u^8 - 14u^7 - 14u^6 + 10u^5 + 12u^4 - 7u^3 - 7u^2 + u + 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= -11u^{10} - 54u^9 - 64u^8 + 66u^7 + 156u^6 - 8u^5 - 139u^4 - 6u^3 + 92u^2 + 14u - 33$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{11} - 12u^{10} + \cdots + 10u - 1$
c_2, c_{10}	$u^{11} + 4u^{10} + 2u^9 - 9u^8 - 8u^7 + 9u^6 + 9u^5 - 7u^4 - 6u^3 + 3u^2 + 2u - 1$
c_3, c_8	$u^{11} - u^9 + u^8 + 3u^7 - u^6 - u^5 - 2u^4 - 2u^3 + 3u^2 + u - 1$
c_4	$u^{11} + u^{10} + 4u^9 + u^8 + 7u^7 - 4u^6 - 3u^5 - 7u^4 + 5u^3 + u^2 - 1$
c_5	$u^{11} - 4u^{10} + 2u^9 + 9u^8 - 8u^7 - 9u^6 + 9u^5 + 7u^4 - 6u^3 - 3u^2 + 2u + 1$
c_6	$u^{11} - 4u^{10} + \cdots + 4u - 1$
c_7	$u^{11} + u^{10} + \cdots + 9u + 1$
c_9	$u^{11} + 4u^{10} + \cdots + 4u + 1$
c_{11}	$u^{11} - 5u^{10} + 13u^9 - 20u^8 + 20u^7 - 13u^6 + 7u^5 - 5u^4 + 3u^3 - u^2 - 1$
c_{12}	$u^{11} + 7u^{10} + \cdots + 7u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{11} - 24y^{10} + \cdots + 6y - 1$
c_2, c_5, c_{10}	$y^{11} - 12y^{10} + \cdots + 10y - 1$
c_3, c_8	$y^{11} - 2y^{10} + \cdots + 7y - 1$
c_4	$y^{11} + 7y^{10} + \cdots + 2y - 1$
c_6, c_9	$y^{11} + 6y^{10} + \cdots - 6y - 1$
c_7	$y^{11} + 7y^{10} + \cdots + 59y - 1$
c_{11}	$y^{11} + y^{10} + \cdots - 2y - 1$
c_{12}	$y^{11} - 17y^{10} + \cdots - 7y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.783748 + 0.507589I$ $a = -0.655301 + 0.652413I$ $b = 0.783748 - 0.507589I$	$-1.51867 + 8.25174I$	$-7.26021 - 7.31178I$
$u = -0.783748 - 0.507589I$ $a = -0.655301 - 0.652413I$ $b = 0.783748 + 0.507589I$	$-1.51867 - 8.25174I$	$-7.26021 + 7.31178I$
$u = 1.09593$ $a = -0.532565$ $b = -1.09593$	-2.75997	-16.4390
$u = -1.038820 + 0.472232I$ $a = 0.374208 - 1.064480I$ $b = 1.038820 - 0.472232I$	$0.22754 + 6.88359I$	$-6.74283 - 7.96199I$
$u = -1.038820 - 0.472232I$ $a = 0.374208 + 1.064480I$ $b = 1.038820 + 0.472232I$	$0.22754 - 6.88359I$	$-6.74283 + 7.96199I$
$u = 0.688260 + 0.474217I$ $a = 0.128118 + 0.656640I$ $b = -0.688260 - 0.474217I$	$-2.33645 - 0.11538I$	$-12.41153 + 0.34745I$
$u = 0.688260 - 0.474217I$ $a = 0.128118 - 0.656640I$ $b = -0.688260 + 0.474217I$	$-2.33645 + 0.11538I$	$-12.41153 - 0.34745I$
$u = 0.526465 + 0.148349I$ $a = -1.33892 - 1.68823I$ $b = -0.526465 - 0.148349I$	$-0.17031 - 3.59582I$	$-8.70170 + 8.76278I$
$u = 0.526465 - 0.148349I$ $a = -1.33892 + 1.68823I$ $b = -0.526465 + 0.148349I$	$-0.17031 + 3.59582I$	$-8.70170 - 8.76278I$
$u = -1.94012 + 0.28522I$ $a = 0.758182 - 0.505152I$ $b = 1.94012 - 0.28522I$	$-12.91640 + 4.72001I$	$-9.66405 - 2.38742I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.94012 - 0.28522I$ $a = \quad 0.758182 + 0.505152I$ $b = \quad 1.94012 + 0.28522I$	$-12.91640 - 4.72001I$	$-9.66405 + 2.38742I$

IV. $I_4^u = \langle b+1,\ u^2+a-u,\ u^3-u-1\rangle$

(i) Arc colorings

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

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

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

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

$$a_7 = \begin{pmatrix}u^2-2\\u^2-1\end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix}-u^2+u+1\\0\end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix}1\\u+1\end{pmatrix}$$

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

$$a_8 = \begin{pmatrix}0\\u^2-1\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -7u^2-u-5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.662359+0.562280I$ $a=-0.78492+1.30714I$ $b=-1.00000$	$1.37919-2.82812I$	$-5.19557+4.65175I$
$u=-0.662359-0.562280I$ $a=-0.78492-1.30714I$ $b=-1.00000$	$1.37919+2.82812I$	$-5.19557-4.65175I$
$u=\quad 1.32472$ $a=-0.430160$ $b=-1.00000$	-2.75839	-18.6090

V. $\boldsymbol{I_5^u = \langle a^2 + b + 1,\ a^3 + a^2 + 2a + 1,\ u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8a^2 - 7a - 20$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -0.215080 + 1.307140I$ $b = 0.662359 + 0.562280I$	$1.37919 + 2.82812I$	$-5.19557 - 4.65175I$
$u = 1.00000$ $a = -0.215080 - 1.307140I$ $b = 0.662359 - 0.562280I$	$1.37919 - 2.82812I$	$-5.19557 + 4.65175I$
$u = 1.00000$ $a = -0.569840$ $b = -1.32472$	-2.75839	-18.6090

VI. $I^u_6 = \langle b+1,\ a^3+a^2+2a+1,\ u-1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5a^2 - 4a - 16$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 1.00000$ $a = -0.215080 + 1.307140I$ $b = -1.00000$	$1.37919 + 2.82812I$	$-6.82789 - 2.41717I$
$u = \quad 1.00000$ $a = -0.215080 - 1.307140I$ $b = -1.00000$	$1.37919 - 2.82812I$	$-6.82789 + 2.41717I$
$u = \quad 1.00000$ $a = -0.569840$ $b = -1.00000$	-2.75839	-15.3440

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^3-2u^2+u-1)(u^{11}-12u^{10}+\cdots+10u-1)$ $\cdot(u^{22}+33u^{21}+\cdots-15u+1)$ $\cdot(u^{30}+46u^{29}+\cdots+11608936u+339889)$
c_2, c_{10}	$(u-1)^6(u^3-u-1)$ $\cdot(u^{11}+4u^{10}+2u^9-9u^8-8u^7+9u^6+9u^5-7u^4-6u^3+3u^2+2u-1)$ $\cdot(u^{22}+u^{21}+\cdots-u-1)(u^{30}+2u^{29}+\cdots+4496u+583)$
c_3, c_8	$(u^3-u^2+2u-1)(u^3+u^2-1)^2$ $\cdot(u^{11}-u^9+u^8+3u^7-u^6-u^5-2u^4-2u^3+3u^2+u-1)$ $\cdot(u^{22}+u^{21}+\cdots+5u+1)(u^{30}+u^{29}+\cdots+58u-11)$
c_4	$(u^3-u-1)(u^3-u^2+2u-1)(u^3+u^2-1)$ $\cdot(u^{11}+u^{10}+4u^9+u^8+7u^7-4u^6-3u^5-7u^4+5u^3+u^2-1)$ $\cdot(u^{22}+2u^{21}+\cdots-126u+103)(u^{30}+8u^{29}+\cdots+2447u+271)$
c_5	$(u+1)^6(u^3-u+1)$ $\cdot(u^{11}-4u^{10}+2u^9+9u^8-8u^7-9u^6+9u^5+7u^4-6u^3-3u^2+2u+1)$ $\cdot(u^{22}+u^{21}+\cdots-u-1)(u^{30}+2u^{29}+\cdots+4496u+583)$
c_6	$((u^3-u^2+2u-1)^3)(u^{11}-4u^{10}+\cdots+4u-1)$ $\cdot((u^{15}+7u^{14}+\cdots+4u+1)^2)(u^{22}-10u^{21}+\cdots-80u+16)$
c_7	$u^6(u^3+2u^2+3u+1)(u^{11}+u^{10}+\cdots+9u+1)(u^{22}+u^{21}+\cdots+36u+8)$ $\cdot(u^{30}+3u^{29}+\cdots+356u+88)$
c_9	$((u^3+u^2+2u+1)^3)(u^{11}+4u^{10}+\cdots+4u+1)$ $\cdot((u^{15}+7u^{14}+\cdots+4u+1)^2)(u^{22}-10u^{21}+\cdots-80u+16)$
c_{11}	$(u-1)^3(u^3-u-1)^2$ $\cdot(u^{11}-5u^{10}+13u^9-20u^8+20u^7-13u^6+7u^5-5u^4+3u^3-u^2-1)$ $\cdot((u^{15}+8u^{14}+\cdots+5u+1)^2)(u^{22}-13u^{21}+\cdots+2u+4)$
c_{12}	$u^3(u^3+u^2+2u+1)^2(u^{11}+7u^{10}+\cdots+7u+1)$ $\cdot(u^{22}+4u^{21}+\cdots-281u-83)(u^{30}+2u^{29}+\cdots+197368u-32296)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^3-2y^2-3y-1)(y^{11}-24y^{10}+\cdots+6y-1)$ $\cdot(y^{22}-113y^{21}+\cdots+107y+1)$ $\cdot(y^{30}-50y^{29}+\cdots-48946220611468y+115524532321)$
c_2, c_5, c_{10}	$((y-1)^6)(y^3-2y^2+y-1)(y^{11}-12y^{10}+\cdots+10y-1)$ $\cdot(y^{22}-33y^{21}+\cdots+15y+1)$ $\cdot(y^{30}-46y^{29}+\cdots-11608936y+339889)$
c_3, c_8	$((y^3-y^2+2y-1)^2)(y^3+3y^2+2y-1)(y^{11}-2y^{10}+\cdots+7y-1)$ $\cdot(y^{22}-9y^{21}+\cdots-25y+1)(y^{30}-3y^{29}+\cdots-3056y+121)$
c_4	$(y^3-2y^2+y-1)(y^3-y^2+2y-1)(y^3+3y^2+2y-1)$ $\cdot(y^{11}+7y^{10}+\cdots+2y-1)(y^{22}+24y^{21}+\cdots+134916y+10609)$ $\cdot(y^{30}+64y^{29}+\cdots-1263195y+73441)$
c_6, c_9	$((y^3+3y^2+2y-1)^3)(y^{11}+6y^{10}+\cdots-6y-1)$ $\cdot((y^{15}-3y^{14}+\cdots+36y-1)^2)(y^{22}+6y^{21}+\cdots-672y+256)$
c_7	$y^6(y^3+2y^2+5y-1)(y^{11}+7y^{10}+\cdots+59y-1)$ $\cdot(y^{22}+13y^{21}+\cdots+368y+64)(y^{30}+17y^{29}+\cdots+280176y+7744)$
c_{11}	$((y-1)^3)(y^3-2y^2+y-1)^2(y^{11}+y^{10}+\cdots-2y-1)$ $\cdot((y^{15}+28y^{13}+\cdots-9y-1)^2)(y^{22}-y^{21}+\cdots-460y+16)$
c_{12}	$y^3(y^3+3y^2+2y-1)^2(y^{11}-17y^{10}+\cdots-7y-1)$ $\cdot(y^{22}-60y^{21}+\cdots-67175y+6889)$ $\cdot(y^{30}-22y^{29}+\cdots-9540868384y+1043031616)$