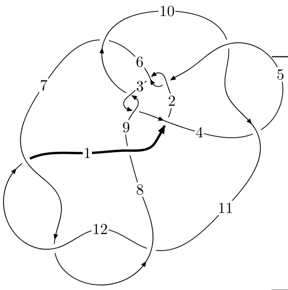
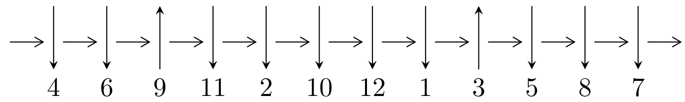
$12a_{0924}$ ($K12a_{0924}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u = \langle &-47905927u^{73} + 611463177u^{72} + \cdots + 34398535568b + 11169010901668,\\
&- 4109478614099u^{73} + 27248497195437u^{72} + \cdots + 29824677052416a + 129084806711241884,\\
&u^{74} - 8u^{73} + \cdots - 216611u + 52022\rangle\\
I_2^u = \langle &u^3 + b + 2u,\ -8u^3 - 3u^2 + 5a - 17u - 7,\ u^4 + 3u^2 + 1\rangle\\
I_3^u = \langle &a^2 + b - a,\ a^3 - 2a^2 + a + 1,\ u + 1\rangle\\
I_4^u = \langle &b^6a^3 - 3b^5a^2 + \cdots - a^2 + 1,\ u + 1\rangle
\end{aligned}
$$

$$
\begin{aligned}
I_1^v &= \langle a,\ b^6 - b^5 + 2b^4 - 2b^3 + 2b^2 - 2b + 1,\ v - 1\rangle\\
I_2^v &= \langle a,\ b^3 + b^2 + 2b + 1,\ v - 1\rangle
\end{aligned}
$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 90 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

[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. $\boldsymbol{I_1^u = \langle -4.79\times 10^{7}u^{73} + 6.11\times 10^{8}u^{72} + \cdots + 3.44\times 10^{9}b + 1.12\times 10^{13},\ -4.11\times 10^{12}u^{73} + 2.72\times 10^{13}u^{72} + \cdots + 2.98\times 10^{13}a + 1.29\times 10^{17},\ u^{74} - 8u^{73} + \cdots - 216611u + 52022\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.137788u^{73} - 0.913623u^{72} + \cdots + 16267.3u - 4328.12 \\ 0.0139267u^{73} - 0.177758u^{72} + \cdots + 9142.14u - 3246.94 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.00499643u^{73} + 0.0350880u^{72} + \cdots - 833.787u + 264.234 \\ 0.0000461649u^{73} - 0.000532115u^{72} + \cdots + 23.8243u - 7.51639 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.00140672u^{73} - 0.0127174u^{72} + \cdots + 521.516u - 198.382 \\ -0.00563162u^{73} + 0.0396538u^{72} + \cdots - 889.693u + 268.556 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.151715u^{73} - 1.09138u^{72} + \cdots + 25409.5u - 7575.06 \\ 0.0139267u^{73} - 0.177758u^{72} + \cdots + 9142.14u - 3246.94 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.00526992u^{73} - 0.0422065u^{72} + \cdots + 1460.05u - 545.028 \\ -0.00530723u^{73} + 0.0369747u^{72} + \cdots - 859.358u + 270.028 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.0114518u^{73} + 0.0715137u^{72} + \cdots - 1087.20u + 313.766 \\ 0.103761u^{73} - 0.693948u^{72} + \cdots + 13273.7u - 3725.94 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.0202394u^{73} + 0.0938447u^{72} + \cdots + 1301.88u - 735.830 \\ -0.0939198u^{73} + 0.678803u^{72} + \cdots - 15904.3u + 4756.89 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.0629844u^{73} - 0.398283u^{72} + \cdots + 5636.71u - 1251.79 \\ 0.0577805u^{73} - 0.401753u^{72} + \cdots + 8772.09u - 2612.98 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{143175559}{644972544}u^{73} + \frac{416881405}{286654464}u^{72} + \cdots - \frac{130085081890987}{5159780352}u + \frac{17208542618977}{2579890176}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$64(64u^{74} - 128u^{73} + \cdots - 2725866u + 511569)$
c_2, c_5	$u^{74} - 8u^{73} + \cdots - 216611u + 52022$
c_3, c_9	$27(27u^{74} - 27u^{73} + \cdots - 170u + 61)$
c_4, c_{10}	$27(27u^{74} - 27u^{73} + \cdots + 208u + 61)$
c_6	$64(64u^{74} + 128u^{73} + \cdots + 1.69976 \times 10^7 u + 3434427)$
c_7, c_{11}, c_{12}	$u^{74} - 4u^{73} + \cdots - 255u + 62$
c_8	$u^{74} + 4u^{73} + \cdots + 777216u + 285696$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$4096 \cdot (4096y^{74} - 135168y^{73} + \cdots - 338930953884y + 261702841761)$
c_2, c_5	$y^{74} - 42y^{73} + \cdots + 4426533163y + 2706288484$
c_3, c_9	$729(729y^{74} + 43011y^{73} + \cdots + 40884y + 3721)$
c_4, c_{10}	$729(729y^{74} + 28431y^{73} + \cdots + 91668y + 3721)$
c_6	$4096 \cdot (4096y^{74} - 118784y^{73} + \cdots - 146351267872524y + 11795288818329)$
c_7, c_{11}, c_{12}	$y^{74} + 66y^{73} + \cdots + 4787y + 3844$
c_8	$y^{74} - 6y^{73} + \cdots + 199138738176y + 81622204416$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.956855 + 0.323244I$ $a = 1.58587 - 1.46932I$ $b = 0.254516 + 0.831849I$	$-2.11972 - 1.41825I$	0
$u = 0.956855 - 0.323244I$ $a = 1.58587 + 1.46932I$ $b = 0.254516 - 0.831849I$	$-2.11972 + 1.41825I$	0
$u = -0.392834 + 0.936221I$ $a = 0.387039 + 1.005900I$ $b = -0.481180 - 0.404568I$	$-1.76313 - 1.05065I$	0
$u = -0.392834 - 0.936221I$ $a = 0.387039 - 1.005900I$ $b = -0.481180 + 0.404568I$	$-1.76313 + 1.05065I$	0
$u = 0.349178 + 0.959515I$ $a = 0.37166 - 1.52102I$ $b = -0.098677 + 1.279600I$	$10.04650 - 1.75472I$	0
$u = 0.349178 - 0.959515I$ $a = 0.37166 + 1.52102I$ $b = -0.098677 - 1.279600I$	$10.04650 + 1.75472I$	0
$u = -1.039710 + 0.243499I$ $a = 0.250091 - 0.954693I$ $b = -0.332462 - 0.537886I$	$0.82573 + 1.48951I$	0
$u = -1.039710 - 0.243499I$ $a = 0.250091 + 0.954693I$ $b = -0.332462 + 0.537886I$	$0.82573 - 1.48951I$	0
$u = 0.853927 + 0.261180I$ $a = -1.54106 + 2.19678I$ $b = -0.135462 - 0.805847I$	$2.19115 + 2.07020I$	$-1.61287 + 2.28344I$
$u = 0.853927 - 0.261180I$ $a = -1.54106 - 2.19678I$ $b = -0.135462 + 0.805847I$	$2.19115 - 2.07020I$	$-1.61287 - 2.28344I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.280504+0.832280I$ $a=-0.514278-0.776313I$ $b=\ \ 0.682562+0.166619I$	$-4.77010+3.14743I$	$-13.70473-3.39156I$
$u=-0.280504-0.832280I$ $a=-0.514278+0.776313I$ $b=\ \ 0.682562-0.166619I$	$-4.77010-3.14743I$	$-13.70473+3.39156I$
$u=-1.141320+0.128617I$ $a=-0.208428+0.721747I$ $b=\ \ 0.188973+0.757335I$	$-2.36891-0.94403I$	0
$u=-1.141320-0.128617I$ $a=-0.208428-0.721747I$ $b=\ \ 0.188973-0.757335I$	$-2.36891+0.94403I$	0
$u=\ \ 1.090800+0.370077I$ $a=-1.24076+0.89624I$ $b=-0.514177-0.873216I$	$0.85631-4.70807I$	0
$u=\ \ 1.090800-0.370077I$ $a=-1.24076-0.89624I$ $b=-0.514177+0.873216I$	$0.85631+4.70807I$	0
$u=\ \ 0.364310+0.761476I$ $a=-0.37557+1.45470I$ $b=\ \ 0.204448-1.123950I$	$3.44887-0.05340I$	$-0.84658+2.45920I$
$u=\ \ 0.364310-0.761476I$ $a=-0.37557-1.45470I$ $b=\ \ 0.204448+1.123950I$	$3.44887+0.05340I$	$-0.84658-2.45920I$
$u=\ \ 0.191646+0.815527I$ $a=-0.59145+1.38561I$ $b=\ \ 0.438339-1.274520I$	$7.47797+7.12202I$	$-0.64413-4.63750I$
$u=\ \ 0.191646-0.815527I$ $a=-0.59145-1.38561I$ $b=\ \ 0.438339+1.274520I$	$7.47797-7.12202I$	$-0.64413+4.63750I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.216626 + 0.805515I$ $a = 0.625128 + 0.613776I$ $b = -0.810740 - 0.031535I$	$-0.12800 + 7.13488I$	$-8.36711 - 5.76742I$
$u = -0.216626 - 0.805515I$ $a = 0.625128 - 0.613776I$ $b = -0.810740 + 0.031535I$	$-0.12800 - 7.13488I$	$-8.36711 + 5.76742I$
$u = -0.019667 + 1.177440I$ $a = 0.22341 + 1.62438I$ $b = -0.478486 - 1.241690I$	$3.47740 - 11.84660I$	0
$u = -0.019667 - 1.177440I$ $a = 0.22341 - 1.62438I$ $b = -0.478486 + 1.241690I$	$3.47740 + 11.84660I$	0
$u = 0.220938 + 0.770110I$ $a = 0.48419 - 1.33432I$ $b = -0.393339 + 1.167180I$	$2.19132 + 3.60535I$	$-4.61334 - 4.48567I$
$u = 0.220938 - 0.770110I$ $a = 0.48419 + 1.33432I$ $b = -0.393339 - 1.167180I$	$2.19132 - 3.60535I$	$-4.61334 + 4.48567I$
$u = 1.116020 + 0.448323I$ $a = -1.01041 + 1.01076I$ $b = -0.551215 - 1.123180I$	$1.08886 - 4.47773I$	0
$u = 1.116020 - 0.448323I$ $a = -1.01041 - 1.01076I$ $b = -0.551215 + 1.123180I$	$1.08886 + 4.47773I$	0
$u = -0.062871 + 1.206620I$ $a = -0.25251 - 1.53863I$ $b = 0.474532 + 1.147300I$	$-1.94478 - 7.53049I$	0
$u = -0.062871 - 1.206620I$ $a = -0.25251 + 1.53863I$ $b = 0.474532 - 1.147300I$	$-1.94478 + 7.53049I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.128650 + 0.526095I$ $a = 0.915681 - 1.068180I$ $b = 0.386717 + 1.327900I$	$7.55452 - 3.52374I$	0
$u = 1.128650 - 0.526095I$ $a = 0.915681 + 1.068180I$ $b = 0.386717 - 1.327900I$	$7.55452 + 3.52374I$	0
$u = 1.163190 + 0.452050I$ $a = 0.922106 - 0.983293I$ $b = 0.72737 + 1.24040I$	$-0.68826 - 8.14483I$	0
$u = 1.163190 - 0.452050I$ $a = 0.922106 + 0.983293I$ $b = 0.72737 - 1.24040I$	$-0.68826 + 8.14483I$	0
$u = -1.241260 + 0.141904I$ $a = 0.296574 - 0.534537I$ $b = -0.199203 - 0.922535I$	$2.60736 - 3.89508I$	0
$u = -1.241260 - 0.141904I$ $a = 0.296574 + 0.534537I$ $b = -0.199203 + 0.922535I$	$2.60736 + 3.89508I$	0
$u = 1.176930 + 0.463093I$ $a = -0.902180 + 1.007980I$ $b = -0.75759 - 1.34685I$	$4.46422 - 11.80280I$	0
$u = 1.176930 - 0.463093I$ $a = -0.902180 - 1.007980I$ $b = -0.75759 + 1.34685I$	$4.46422 + 11.80280I$	0
$u = -0.143657 + 1.278550I$ $a = 0.24276 + 1.40588I$ $b = -0.405638 - 1.018490I$	$-0.08646 - 2.61917I$	0
$u = -0.143657 - 1.278550I$ $a = 0.24276 - 1.40588I$ $b = -0.405638 + 1.018490I$	$-0.08646 + 2.61917I$	0

Solutions to I^u_1	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.279230 + 0.234772I$ $a = -0.642765 - 0.276219I$ $b = -0.580762 - 0.124608I$	$0.24329 - 4.29843I$	0
$u = 1.279230 - 0.234772I$ $a = -0.642765 + 0.276219I$ $b = -0.580762 + 0.124608I$	$0.24329 + 4.29843I$	0
$u = 1.311670 + 0.369854I$ $a = 0.092483 - 0.294979I$ $b = 1.288210 - 0.094940I$	$-4.77612 - 11.28530I$	0
$u = 1.311670 - 0.369854I$ $a = 0.092483 + 0.294979I$ $b = 1.288210 + 0.094940I$	$-4.77612 + 11.28530I$	0
$u = 1.324880 + 0.364823I$ $a = -0.060136 + 0.199915I$ $b = -1.207270 + 0.187553I$	$-9.63709 - 7.30911I$	0
$u = 1.324880 - 0.364823I$ $a = -0.060136 - 0.199915I$ $b = -1.207270 - 0.187553I$	$-9.63709 + 7.30911I$	0
$u = -1.147840 + 0.773330I$ $a = 0.232086 + 1.254660I$ $b = 0.436399 - 0.614895I$	$-2.33044 - 1.74529I$	0
$u = -1.147840 - 0.773330I$ $a = 0.232086 - 1.254660I$ $b = 0.436399 + 0.614895I$	$-2.33044 + 1.74529I$	0
$u = 1.348690 + 0.354551I$ $a = 0.0290628 - 0.0464895I$ $b = 1.057490 - 0.302589I$	$-7.05936 - 3.20770I$	0
$u = 1.348690 - 0.354551I$ $a = 0.0290628 + 0.0464895I$ $b = 1.057490 + 0.302589I$	$-7.05936 + 3.20770I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.011995 + 0.576995I$ $a = -0.030862 + 0.532816I$ $b = 0.490221 - 0.663405I$	$3.82003 + 1.44123I$	$-2.42911 - 4.15844I$
$u = 0.011995 - 0.576995I$ $a = -0.030862 - 0.532816I$ $b = 0.490221 + 0.663405I$	$3.82003 - 1.44123I$	$-2.42911 + 4.15844I$
$u = 1.41066 + 0.30363I$ $a = 0.054757 + 0.271556I$ $b = 0.689456 - 0.390814I$	$-6.22916 - 2.87126I$	0
$u = 1.41066 - 0.30363I$ $a = 0.054757 - 0.271556I$ $b = 0.689456 + 0.390814I$	$-6.22916 + 2.87126I$	0
$u = -1.27089 + 0.74232I$ $a = -0.359829 - 1.266690I$ $b = -0.511628 + 0.814875I$	$-7.10664 + 2.78984I$	0
$u = -1.27089 - 0.74232I$ $a = -0.359829 + 1.266690I$ $b = -0.511628 - 0.814875I$	$-7.10664 - 2.78984I$	0
$u = -1.37156 + 0.56271I$ $a = 0.88834 + 1.25590I$ $b = 0.63563 - 1.37097I$	$-0.7782 + 17.9224I$	0
$u = -1.37156 - 0.56271I$ $a = 0.88834 - 1.25590I$ $b = 0.63563 + 1.37097I$	$-0.7782 - 17.9224I$	0
$u = -1.36978 + 0.57557I$ $a = -0.82799 - 1.26798I$ $b = -0.63976 + 1.31414I$	$-6.1011 + 13.7362I$	0
$u = -1.36978 - 0.57557I$ $a = -0.82799 + 1.26798I$ $b = -0.63976 - 1.31414I$	$-6.1011 - 13.7362I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.37394+0.59852I$ $a=\ 0.73720+1.24846I$ $b=\ 0.607699-1.232080I$	$-4.11337+9.11039I$	0
$u=-1.37394-0.59852I$ $a=\ 0.73720-1.24846I$ $b=\ 0.607699+1.232080I$	$-4.11337-9.11039I$	0
$u=-1.34574+0.68489I$ $a=\ 0.502680+1.250270I$ $b=\ 0.549270-0.995359I$	$-4.54187+7.58769I$	0
$u=-1.34574-0.68489I$ $a=\ 0.502680-1.250270I$ $b=\ 0.549270+0.995359I$	$-4.54187-7.58769I$	0
$u=\ 1.51230+0.35184I$ $a=\ 0.130676-0.429581I$ $b=-0.537934+0.676409I$	$-7.49574+1.47115I$	0
$u=\ 1.51230-0.35184I$ $a=\ 0.130676+0.429581I$ $b=-0.537934-0.676409I$	$-7.49574-1.47115I$	0
$u=-1.44576+0.60502I$ $a=-0.683032-1.047140I$ $b=-0.417484+1.229110I$	$4.06899+8.19584I$	0
$u=-1.44576-0.60502I$ $a=-0.683032+1.047140I$ $b=-0.417484-1.229110I$	$4.06899-8.19584I$	0
$u=-0.274408+0.263174I$ $a=-0.697845+0.975456I$ $b=-0.135972+0.391654I$	$-0.560147+0.862728I$	$-9.95266-7.82530I$
$u=-0.274408-0.263174I$ $a=-0.697845-0.975456I$ $b=-0.135972-0.391654I$	$-0.560147-0.862728I$	$-9.95266+7.82530I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.58981 + 0.44139I$ $a = -0.230102 + 0.549729I$ $b = 0.422808 - 0.863129I$	$-1.65458 + 5.47067I$	0
$u = 1.58981 - 0.44139I$ $a = -0.230102 - 0.549729I$ $b = 0.422808 + 0.863129I$	$-1.65458 - 5.47067I$	0
$u = -0.26331 + 1.73526I$ $a = -0.098629 - 1.231090I$ $b = 0.154343 + 0.965654I$	$8.73121 - 0.63574I$	0
$u = -0.26331 - 1.73526I$ $a = -0.098629 + 1.231090I$ $b = 0.154343 - 0.965654I$	$8.73121 + 0.63574I$	0

II. $\boldsymbol{I_2^u = \langle u^3 + b + 2u,\ -8u^3 - 3u^2 + 5a - 17u - 7,\ u^4 + 3u^2 + 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{8}{5}u^3 + \frac{3}{5}u^2 + \frac{17}{5}u + \frac{7}{5} \\ -u^3 - 2u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{4}{5}u^3 - \frac{1}{5}u^2 + \frac{11}{5}u - \frac{4}{5} \\ 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -\frac{2}{5}u^3 + \frac{2}{5}u^2 - u + \frac{6}{5} \\ -\frac{1}{5}u^3 - \frac{1}{5}u^2 + \frac{1}{5}u - \frac{4}{5} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{3}{5}u^3 + \frac{3}{5}u^2 + \frac{7}{5}u + \frac{7}{5} \\ -u^3 - 2u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{2}{5}u^3 + \frac{2}{5}u^2 - u + \frac{11}{5} \\ -\frac{1}{5}u^3 + \frac{4}{5}u^2 - \frac{4}{5}u - \frac{4}{5} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{3}{5}u^3 + \frac{8}{5}u^2 + \frac{7}{5}u + \frac{12}{5} \\ -u^3 - 3u^2 - 2u - 2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{5}u^3 + \frac{8}{5}u^2 + \frac{3}{5}u + \frac{11}{5} \\ -\frac{3}{5}u^3 - \frac{8}{5}u^2 - \frac{7}{5}u - \frac{7}{5} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{3}{5}u^2 + \frac{6}{5}u + \frac{8}{5} \\ \frac{3}{5}u^3 - \frac{2}{5}u^2 - \frac{3}{5}u - \frac{3}{5} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$25(25y^4 - 10y^3 + 11y^2 + 2y + 1)$
c_2, c_5, c_7 c_{11}, c_{12}	$(y^2 + 3y + 1)^2$
c_3, c_4, c_9 c_{10}	$(y + 1)^4$
c_6	$25(25y^4 + 10y^3 + 11y^2 - 2y + 1)$
c_8	$(y^2 + 7y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034I$ $a = 1.17082 + 1.72361I$ $b = -1.000000I$	0.986960	−4.00000
$u = -0.618034I$ $a = 1.17082 - 1.72361I$ $b = 1.000000I$	0.986960	−4.00000
$u = 1.61803I$ $a = -0.170820 - 1.276390I$ $b = 1.000000I$	8.88264	−4.00000
$u = -1.61803I$ $a = -0.170820 + 1.276390I$ $b = -1.000000I$	8.88264	−4.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \ 1.23279 + 0.79255I$ $b = \ 0.341164 - 1.161540I$	-1.64493	-6.00000
$u = -1.00000$ $a = \ 1.23279 - 0.79255I$ $b = \ 0.341164 + 1.161540I$	-1.64493	-6.00000
$u = -1.00000$ $a = -0.465571$ $b = -0.682328$	-1.64493	-6.00000

IV. $I_4^u = \langle b^6a^3 - 3b^5a^2 + \cdots - a^2 + 1,\ u + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4b^2a - 4b + 4a - 12$

(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^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \cdots$ $a = \cdots$ $b = \cdots$	$1.37919 - 2.82812I$	$-15.0195 + 0.I$

V. $\boldsymbol{I_1^v = \langle a,\ b^6 - b^5 + 2b^4 - 2b^3 + 2b^2 - 2b + 1,\ v - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4b^3 + 4b - 6$

(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_5	u^6
c_3, c_4, c_6 c_9, c_{10}	$u^6 - u^5 + 2u^4 - 2u^3 + 2u^2 - 2u + 1$
c_7, c_{11}, c_{12}	$(u^3 + u^2 + 2u + 1)^2$
c_8	$(u^3 - u^2 + 1)^2$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = 1.00000$ $a = 0$ $b = -0.498832 + 1.001300I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$v = 1.00000$ $a = 0$ $b = -0.498832 - 1.001300I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$v = 1.00000$ $a = 0$ $b = 0.284920 + 1.115140I$	-1.11345	$-9.01951 + 0.I$
$v = 1.00000$ $a = 0$ $b = 0.284920 - 1.115140I$	-1.11345	$-9.01951 + 0.I$
$v = 1.00000$ $a = 0$ $b = 0.713912 + 0.305839I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$v = 1.00000$ $a = 0$ $b = 0.713912 - 0.305839I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$

VI. $\boldsymbol{I_2^v = \langle a,\ b^3+b^2+2b+1,\ v-1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4b^2 - 4b - 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 1.00000$ $a = 0$ $b = -0.215080 + 1.307140I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$v = 1.00000$ $a = 0$ $b = -0.215080 - 1.307140I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$v = 1.00000$ $a = 0$ $b = -0.569840$	-1.11345	-9.01950

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$320(u^3+u+1)(u^3+3u^2+2u-1)(5u^4-10u^3+9u^2-4u+1)$ $\cdot(u^6+3u^5+4u^4+2u^3+1)$ $\cdot(64u^{74}-128u^{73}+\cdots-2725866u+511569)$
c_2, c_5	$u^9(u+1)^3(u^4+3u^2+1)(u^{74}-8u^{73}+\cdots-216611u+52022)$
c_3, c_9	$27(u^2+1)^2(u^3+u+1)(u^3+u^2+2u+1)$ $\cdot(u^6-u^5+2u^4-2u^3+2u^2-2u+1)(27u^{74}-27u^{73}+\cdots-170u+61)$
c_4, c_{10}	$27(u^2+1)^2(u^3+u+1)(u^3+u^2+2u+1)$ $\cdot(u^6-u^5+2u^4-2u^3+2u^2-2u+1)(27u^{74}-27u^{73}+\cdots+208u+61)$
c_6	$320(u^3+u^2+2u+1)(u^3+2u^2+u-1)(5u^4+u^2+2u+1)$ $\cdot(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(64u^{74}+128u^{73}+\cdots+16997580u+3434427)$
c_7, c_{11}, c_{12}	$u^3(u^3+u^2+2u+1)^3(u^4+3u^2+1)(u^{74}-4u^{73}+\cdots-255u+62)$
c_8	$u^3(u^3-u^2+1)^3(u^4+7u^2+1)(u^{74}+4u^{73}+\cdots+777216u+285696)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$102400(y^3-5y^2+10y-1)(y^3+2y^2+y-1)$ $\cdot(25y^4-10y^3+11y^2+2y+1)(y^6-y^5+4y^4-2y^3+8y^2+1)$ $\cdot(4096y^{74}-135168y^{73}+\cdots-338930953884y+261702841761)$
c_2, c_5	$y^9(y-1)^3(y^2+3y+1)^2$ $\cdot(y^{74}-42y^{73}+\cdots+4426533163y+2706288484)$
c_3, c_9	$729(y+1)^4(y^3+2y^2+y-1)(y^3+3y^2+2y-1)$ $\cdot(y^6+3y^5+4y^4+2y^3+1)(729y^{74}+43011y^{73}+\cdots+40884y+3721)$
c_4, c_{10}	$729(y+1)^4(y^3+2y^2+y-1)(y^3+3y^2+2y-1)$ $\cdot(y^6+3y^5+4y^4+2y^3+1)(729y^{74}+28431y^{73}+\cdots+91668y+3721)$
c_6	$102400(y^3-2y^2+5y-1)(y^3+3y^2+2y-1)$ $\cdot(25y^4+10y^3+11y^2-2y+1)(y^6+3y^5+4y^4+2y^3+1)$ $\cdot(4096y^{74}-118784y^{73}+\cdots-146351267872524y+11795288818329)$
c_7, c_{11}, c_{12}	$y^3(y^2+3y+1)^2(y^3+3y^2+2y-1)^3$ $\cdot(y^{74}+66y^{73}+\cdots+4787y+3844)$
c_8	$y^3(y^2+7y+1)^2(y^3-y^2+2y-1)^3$ $\cdot(y^{74}-6y^{73}+\cdots+199138738176y+81622204416)$