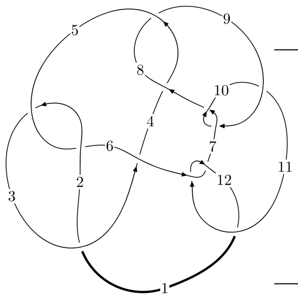
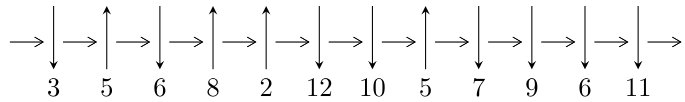
$12n_{0055}$ ($K12n_{0055}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -1.43951 \times 10^{32} u^{27} + 3.79444 \times 10^{32} u^{26} + \cdots + 9.42397 \times 10^{33} d + 5.95648 \times 10^{32},\\
& 5.68907 \times 10^{31} u^{27} - 1.81131 \times 10^{32} u^{26} + \cdots + 1.88479 \times 10^{34} c - 1.63326 \times 10^{34},\\
& 7.06990 \times 10^{32} u^{27} - 2.19194 \times 10^{33} u^{26} + \cdots + 9.42397 \times 10^{33} b - 2.89436 \times 10^{34},\\
& -6.86736 \times 10^{32} u^{27} + 2.01828 \times 10^{33} u^{26} + \cdots + 1.88479 \times 10^{34} a + 1.76377 \times 10^{34},\\
& u^{28} - 3u^{27} + \cdots - 64u + 32 \rangle\\
I_2^u = \langle & -4182326921 u^{19} c - 3076005459 u^{19} + \cdots + 29433713862 c - 28068851486,\\
& 49133842327 u^{19} c - 33157787379 u^{19} + \cdots - 204672432210 c + 75288972938,\\
& -96297864 u^{19} + 56397459 u^{18} + \cdots + 6762765143 b + 683924131,\\
& 4877710595 u^{19} + 3159804985 u^{18} + \cdots + 108204242288 a + 50023322678,\\
& u^{20} + u^{19} + \cdots - 8u - 4 \rangle
\end{aligned}$$

$$\begin{aligned}
I_1^v &= \langle a,\ d,\ c-1,\ b+1,\ v^2+v+1 \rangle\\
I_2^v &= \langle a,\ d-1,\ c+a-1,\ b+1,\ v^2+v+1 \rangle\\
I_3^v &= \langle c,\ d-1,\ b,\ a+1,\ v+1 \rangle\\
I_4^v &= \langle c,\ d-1,\ v^2ba+v^2b-av+c-v-1,\ b^2v^2-bv+1 \rangle
\end{aligned}$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 73 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`).

I. $\boldsymbol{I_1^u = \langle -1.44 \times 10^{32} u^{27} + 3.79 \times 10^{32} u^{26} + \cdots + 9.42 \times 10^{33} d + 5.96 \times 10^{32},\ 5.69 \times 10^{31} u^{27} - 1.81 \times 10^{32} u^{26} + \cdots + 1.88 \times 10^{34} c - 1.63 \times 10^{34},\ 7.07 \times 10^{32} u^{27} - 2.19 \times 10^{33} u^{26} + \cdots + 9.42 \times 10^{33} b - 2.89 \times 10^{34},\ -6.87 \times 10^{32} u^{27} + 2.02 \times 10^{33} u^{26} + \cdots + 1.88 \times 10^{34} a + 1.76 \times 10^{34},\ u^{28} - 3u^{27} + \cdots - 64u + 32 \rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.00301840u^{27} + 0.00961014u^{26} + \cdots - 0.512168u + 0.866547 \\ 0.0152750u^{27} - 0.0402637u^{26} + \cdots + 1.56827u - 0.0632056 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.0364356u^{27} - 0.107082u^{26} + \cdots + 4.89194u - 0.935790 \\ -0.0750204u^{27} + 0.232591u^{26} + \cdots - 10.9778u + 3.07128 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.0188045u^{27} + 0.0531544u^{26} + \cdots - 2.21254u + 0.947510 \\ 0.00903337u^{27} - 0.0298398u^{26} + \cdots + 1.30721u - 0.185253 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.0414237u^{27} + 0.136562u^{26} + \cdots - 6.59726u + 2.19775 \\ 0.0656027u^{27} - 0.212991u^{26} + \cdots + 10.4331u - 2.93689 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.0439376u^{27} - 0.115337u^{26} + \cdots + 2.49821u + 0.486668 \\ -0.0676735u^{27} + 0.181595u^{26} + \cdots - 5.26458u - 0.607411 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0439376u^{27} - 0.115337u^{26} + \cdots + 2.49821u + 0.486668 \\ -0.0724643u^{27} + 0.187953u^{26} + \cdots - 5.61617u - 1.13462 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0385848u^{27} - 0.125509u^{26} + \cdots + 6.08587u - 2.13549 \\ -0.0540378u^{27} + 0.180613u^{26} + \cdots - 9.11878u + 2.75912 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.00301840u^{27} + 0.00961014u^{26} + \cdots - 0.512168u + 0.866547 \\ -0.0157861u^{27} + 0.0435442u^{26} + \cdots - 1.70037u + 0.0809635 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.217306u^{27} + 0.532528u^{26} + \cdots - 20.8205u - 2.69421$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{28} + 9u^{27} + \cdots - 56u + 16$
c_2, c_5	$u^{28} + u^{27} + \cdots + 8u + 4$
c_3	$u^{28} - u^{27} + \cdots + 1736u + 1252$
c_4, c_8	$u^{28} - 3u^{27} + \cdots - 64u + 32$
c_6, c_7, c_9 c_{11}	$u^{28} - 5u^{27} + \cdots - 3u + 1$
c_{10}, c_{12}	$u^{28} + 9u^{27} + \cdots + u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{28} + 21y^{27} + \cdots - 6432y + 256$
c_2, c_5	$y^{28} + 9y^{27} + \cdots - 56y + 16$
c_3	$y^{28} + 33y^{27} + \cdots - 17874936y + 1567504$
c_4, c_8	$y^{28} - 15y^{27} + \cdots + 3072y + 1024$
c_6, c_7, c_9 c_{11}	$y^{28} - 9y^{27} + \cdots - y + 1$
c_{10}, c_{12}	$y^{28} + 31y^{27} + \cdots + 39y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.387721 + 0.851263I$ $a = -0.858816 + 0.725565I$ $b = 1.19972 - 1.08591I$ $c = 0.488405 - 0.103669I$ $d = 0.959210 + 0.415864I$	$-4.11180 - 3.97036I$	$-11.03599 + 5.92521I$
$u = 0.387721 - 0.851263I$ $a = -0.858816 - 0.725565I$ $b = 1.19972 + 1.08591I$ $c = 0.488405 + 0.103669I$ $d = 0.959210 - 0.415864I$	$-4.11180 + 3.97036I$	$-11.03599 - 5.92521I$
$u = -0.048850 + 0.802561I$ $a = 0.029080 - 0.305052I$ $b = -0.065828 + 1.072140I$ $c = 0.570907 + 0.125829I$ $d = 0.670453 - 0.368171I$	$-1.00554 + 1.45329I$	$-3.70692 - 4.69342I$
$u = -0.048850 - 0.802561I$ $a = 0.029080 + 0.305052I$ $b = -0.065828 - 1.072140I$ $c = 0.570907 - 0.125829I$ $d = 0.670453 + 0.368171I$	$-1.00554 - 1.45329I$	$-3.70692 + 4.69342I$
$u = 1.195800 + 0.230197I$ $a = -1.033490 - 0.671818I$ $b = -0.010332 + 0.550938I$ $c = 0.28063 - 1.44187I$ $d = -0.869944 + 0.668233I$	$0.294538 + 1.243650I$	$-3.92766 - 2.52803I$
$u = 1.195800 - 0.230197I$ $a = -1.033490 + 0.671818I$ $b = -0.010332 - 0.550938I$ $c = 0.28063 + 1.44187I$ $d = -0.869944 - 0.668233I$	$0.294538 - 1.243650I$	$-3.92766 + 2.52803I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.512543 + 0.548760I$ $a = 0.511467 + 0.677219I$ $b = 0.399127 + 0.038680I$ $c = 0.810755 + 0.367303I$ $d = 0.023376 - 0.463629I$	$0.77284 + 1.38296I$	$2.12358 - 4.20585I$
$u = 0.512543 - 0.548760I$ $a = 0.511467 - 0.677219I$ $b = 0.399127 - 0.038680I$ $c = 0.810755 - 0.367303I$ $d = 0.023376 + 0.463629I$	$0.77284 - 1.38296I$	$2.12358 + 4.20585I$
$u = 1.240340 + 0.558685I$ $a = -0.781492 + 0.727914I$ $b = 0.253028 - 0.776710I$ $c = -0.19285 - 1.48947I$ $d = -1.085500 + 0.660311I$	$-1.36469 + 9.34331I$	$-7.27750 - 7.90351I$
$u = 1.240340 - 0.558685I$ $a = -0.781492 - 0.727914I$ $b = 0.253028 + 0.776710I$ $c = -0.19285 + 1.48947I$ $d = -1.085500 - 0.660311I$	$-1.36469 - 9.34331I$	$-7.27750 + 7.90351I$
$u = -0.306891 + 1.332240I$ $a = -0.939869 + 0.149572I$ $b = -0.419071 + 0.240287I$ $c = 0.448937 + 0.172706I$ $d = 0.940326 - 0.746445I$	$2.80790 + 2.77377I$	$-2.82329 - 2.35775I$
$u = -0.306891 - 1.332240I$ $a = -0.939869 - 0.149572I$ $b = -0.419071 - 0.240287I$ $c = 0.448937 - 0.172706I$ $d = 0.940326 + 0.746445I$	$2.80790 - 2.77377I$	$-2.82329 + 2.35775I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.599185 + 0.160658I$ $a = 1.46524 - 1.11304I$ $b = -0.040138 + 0.305232I$ $c = 1.279080 - 0.454824I$ $d = -0.305944 + 0.246798I$	$-0.29820 + 2.58448I$	$1.60498 - 4.48843I$
$u = -0.599185 - 0.160658I$ $a = 1.46524 + 1.11304I$ $b = -0.040138 - 0.305232I$ $c = 1.279080 + 0.454824I$ $d = -0.305944 - 0.246798I$	$-0.29820 - 2.58448I$	$1.60498 + 4.48843I$
$u = 0.449039 + 1.329150I$ $a = -1.106900 - 0.095973I$ $b = -0.328030 + 0.364080I$ $c = 0.437109 - 0.156367I$ $d = 1.028210 + 0.725550I$	$2.18074 - 8.77807I$	$-4.21049 + 7.13120I$
$u = 0.449039 - 1.329150I$ $a = -1.106900 + 0.095973I$ $b = -0.328030 - 0.364080I$ $c = 0.437109 + 0.156367I$ $d = 1.028210 - 0.725550I$	$2.18074 + 8.77807I$	$-4.21049 - 7.13120I$
$u = -1.36520 + 0.37405I$ $a = -0.546646 + 0.073706I$ $b = -0.536551 + 0.044814I$ $c = 0.022772 + 1.320010I$ $d = -0.986935 - 0.757343I$	$3.38586 - 5.92225I$	$-1.05943 + 5.53498I$
$u = -1.36520 - 0.37405I$ $a = -0.546646 - 0.073706I$ $b = -0.536551 - 0.044814I$ $c = 0.022772 - 1.320010I$ $d = -0.986935 + 0.757343I$	$3.38586 + 5.92225I$	$-1.05943 - 5.53498I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.128781 + 0.527754I$ $a = 1.29102 + 1.56415I$ $b = -2.31393 - 3.07959I$ $c = 0.536628 - 0.033094I$ $d = 0.856428 + 0.114486I$	$-2.91457 + 1.71407I$	$-11.28016 - 2.34859I$
$u = 0.128781 - 0.527754I$ $a = 1.29102 - 1.56415I$ $b = -2.31393 + 3.07959I$ $c = 0.536628 + 0.033094I$ $d = 0.856428 - 0.114486I$	$-2.91457 - 1.71407I$	$-11.28016 + 2.34859I$
$u = 1.36013 + 0.80195I$ $a = 0.214279 + 1.068830I$ $b = 0.00712 - 2.44927I$ $c = -0.423558 - 1.271240I$ $d = -1.23591 + 0.70803I$	$5.1047 + 16.3284I$	$-4.49305 - 9.50798I$
$u = 1.36013 - 0.80195I$ $a = 0.214279 - 1.068830I$ $b = 0.00712 + 2.44927I$ $c = -0.423558 + 1.271240I$ $d = -1.23591 - 0.70803I$	$5.1047 - 16.3284I$	$-4.49305 + 9.50798I$
$u = -1.41454 + 0.73498I$ $a = 0.133893 - 0.804174I$ $b = -0.47661 + 2.09588I$ $c = -0.342095 + 1.249650I$ $d = -1.20379 - 0.74444I$	$6.34910 - 10.12380I$	$-2.60535 + 5.05088I$
$u = -1.41454 - 0.73498I$ $a = 0.133893 + 0.804174I$ $b = -0.47661 - 2.09588I$ $c = -0.342095 - 1.249650I$ $d = -1.20379 + 0.74444I$	$6.34910 + 10.12380I$	$-2.60535 - 5.05088I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.57578 + 0.34473I$ $a = 0.069527 + 1.019780I$ $b = 0.22695 - 2.42039I$ $c = 0.317772 + 0.829753I$ $d = -0.597487 - 1.051030I$	$9.40632 + 3.24641I$	$0.187126 - 1.202849I$
$u = 1.57578 - 0.34473I$ $a = 0.069527 - 1.019780I$ $b = 0.22695 + 2.42039I$ $c = 0.317772 - 0.829753I$ $d = -0.597487 + 1.051030I$	$9.40632 - 3.24641I$	$0.187126 + 1.202849I$
$u = -1.61547 + 0.19947I$ $a = 0.052706 - 0.927660I$ $b = -0.39545 + 2.29628I$ $c = 0.265518 - 0.890486I$ $d = -0.692497 + 1.031290I$	$9.82407 + 3.16258I$	$0.50415 - 3.81889I$
$u = -1.61547 - 0.19947I$ $a = 0.052706 + 0.927660I$ $b = -0.39545 - 2.29628I$ $c = 0.265518 + 0.890486I$ $d = -0.692497 - 1.031290I$	$9.82407 - 3.16258I$	$0.50415 + 3.81889I$

II.
$\boldsymbol{I^u_2 = \langle -4.18\times 10^{9}cu^{19} - 3.08\times 10^{9}u^{19} + \cdots + 2.94\times 10^{10}c - 2.81\times 10^{10},\ 4.91\times 10^{10}cu^{19} - 3.32\times 10^{10}u^{19} + \cdots - 2.05\times 10^{11}c + 7.53\times 10^{10},\ -9.63\times 10^{7}u^{19} + 5.64\times 10^{7}u^{18} + \cdots + 6.76\times 10^{9}b + 6.84\times 10^{8},\ 4.88\times 10^{9}u^{19} + 3.16\times 10^{9}u^{18} + \cdots + 1.08\times 10^{11}a + 5.00\times 10^{10},\ u^{20} + u^{19} + \cdots - 8u - 4\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} c \\ 0.154609cu^{19} + 0.113711u^{19} + \cdots - 1.08808c + 1.03762 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.0450787u^{19} - 0.0292022u^{18} + \cdots - 0.0198092u - 0.462305 \\ 0.0142394u^{19} - 0.00833941u^{18} + \cdots + 0.752305u - 0.101131 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.154609cu^{19} - 0.113711u^{19} + \cdots + 2.08808c - 1.03762 \\ 0.409919cu^{19} + 0.367791u^{19} + \cdots - 1.57088c + 0.0883006 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.113711cu^{19} - 0.158790u^{19} + \cdots + 1.03762c - 1.49993 \\ -0.254080cu^{19} + 0.382031u^{19} + \cdots + 0.949324c - 0.0128302 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.266051u^{19} + 0.0484830u^{18} + \cdots + 1.26067u + 1.47399 \\ 0.780982u^{19} - 0.190367u^{18} + \cdots - 1.82190u - 2.40273 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.266051u^{19} + 0.0484830u^{18} + \cdots + 1.26067u + 1.47399 \\ 0.358296u^{19} - 0.132857u^{18} + \cdots - 0.369830u - 1.14460 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0308393u^{19} + 0.0375416u^{18} + \cdots - 0.732496u + 0.563435 \\ 0.0785037u^{19} + 0.0385598u^{18} + \cdots + 0.575329u - 0.127940 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} c \\ -0.154609cu^{19} - 0.113711u^{19} + \cdots + 1.08808c - 1.03762 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{4263121051}{13525530286}u^{19} - \frac{7308875275}{13525530286}u^{18} + \cdots + \frac{12379392387}{13525530286}u - \frac{17100277556}{6762765143}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{20}+6u^{19}+\cdots-2u+1)^2$
c_2, c_5	$(u^{20}+2u^{19}+\cdots-2u+1)^2$
c_3	$(u^{20}-2u^{19}+\cdots+36u+17)^2$
c_4, c_8	$(u^{20}+u^{19}+\cdots-8u-4)^2$
c_6, c_7, c_9 c_{11}	$u^{40}-3u^{39}+\cdots+40u-16$
c_{10}, c_{12}	$u^{40}+19u^{39}+\cdots+288u+256$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{20}+18y^{19}+\cdots-86y+1)^2$
c_2, c_5	$(y^{20}+6y^{19}+\cdots-2y+1)^2$
c_3	$(y^{20}+30y^{19}+\cdots+1254y+289)^2$
c_4, c_8	$(y^{20}-15y^{19}+\cdots-24y+16)^2$
c_6, c_7, c_9 c_{11}	$y^{40}-19y^{39}+\cdots-288y+256$
c_{10}, c_{12}	$y^{40}+y^{39}+\cdots-4022784y+65536$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.685016 + 0.443026I$ $a = -0.568862 + 0.830797I$ $b = 0.504299 - 0.392204I$ $c = 0.458140 - 0.042470I$ $d = 1.164140 + 0.200619I$	$-4.73160 + 1.82256I$	$-11.12541 - 5.12436I$
$u = 0.685016 + 0.443026I$ $a = -0.568862 + 0.830797I$ $b = 0.504299 - 0.392204I$ $c = -0.09245 - 3.22238I$ $d = -1.008900 + 0.310075I$	$-4.73160 + 1.82256I$	$-11.12541 - 5.12436I$
$u = 0.685016 - 0.443026I$ $a = -0.568862 - 0.830797I$ $b = 0.504299 + 0.392204I$ $c = 0.458140 + 0.042470I$ $d = 1.164140 - 0.200619I$	$-4.73160 - 1.82256I$	$-11.12541 + 5.12436I$
$u = 0.685016 - 0.443026I$ $a = -0.568862 - 0.830797I$ $b = 0.504299 + 0.392204I$ $c = -0.09245 + 3.22238I$ $d = -1.008900 - 0.310075I$	$-4.73160 - 1.82256I$	$-11.12541 + 5.12436I$
$u = -1.176520 + 0.244065I$ $a = 0.859965 + 0.764175I$ $b = -0.170280 - 0.634831I$ $c = 0.577483 - 0.947538I$ $d = -0.531003 + 0.769533I$	$0.28251 - 3.88098I$	$-3.93502 + 4.02252I$
$u = -1.176520 + 0.244065I$ $a = 0.859965 + 0.764175I$ $b = -0.170280 - 0.634831I$ $c = 0.27911 + 1.47852I$ $d = -0.876713 - 0.653077I$	$0.28251 - 3.88098I$	$-3.93502 + 4.02252I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.176520 - 0.244065I$ $a = 0.859965 - 0.764175I$ $b = -0.170280 + 0.634831I$ $c = 0.577483 + 0.947538I$ $d = -0.531003 - 0.769533I$	$0.28251 + 3.88098I$	$-3.93502 - 4.02252I$
$u = -1.176520 - 0.244065I$ $a = 0.859965 - 0.764175I$ $b = -0.170280 + 0.634831I$ $c = 0.27911 - 1.47852I$ $d = -0.876713 + 0.653077I$	$0.28251 + 3.88098I$	$-3.93502 - 4.02252I$
$u = -1.256010 + 0.124886I$ $a = 0.141507 - 1.024890I$ $b = -0.53718 + 2.43181I$ $c = 0.339080 + 1.286040I$ $d = -0.808307 - 0.727038I$	$1.249910 + 0.191668I$	$-2.26430 + 0.22109I$
$u = -1.256010 + 0.124886I$ $a = 0.141507 - 1.024890I$ $b = -0.53718 + 2.43181I$ $c = 0.408592 + 0.009946I$ $d = 1.44598 - 0.05954I$	$1.249910 + 0.191668I$	$-2.26430 + 0.22109I$
$u = -1.256010 - 0.124886I$ $a = 0.141507 + 1.024890I$ $b = -0.53718 - 2.43181I$ $c = 0.339080 - 1.286040I$ $d = -0.808307 + 0.727038I$	$1.249910 - 0.191668I$	$-2.26430 - 0.22109I$
$u = -1.256010 - 0.124886I$ $a = 0.141507 + 1.024890I$ $b = -0.53718 - 2.43181I$ $c = 0.408592 - 0.009946I$ $d = 1.44598 + 0.05954I$	$1.249910 - 0.191668I$	$-2.26430 - 0.22109I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.268400 + 0.295253I$ $a = 0.028064 + 1.126150I$ $b = 0.27254 - 2.58310I$ $c = 0.150939 - 1.397650I$ $d = -0.923621 + 0.707241I$	$0.89345 + 5.67427I$	$-3.40403 - 5.66395I$
$u = 1.268400 + 0.295253I$ $a = 0.028064 + 1.126150I$ $b = 0.27254 - 2.58310I$ $c = 0.406505 - 0.023413I$ $d = 1.45186 + 0.14122I$	$0.89345 + 5.67427I$	$-3.40403 - 5.66395I$
$u = 1.268400 - 0.295253I$ $a = 0.028064 - 1.126150I$ $b = 0.27254 + 2.58310I$ $c = 0.150939 + 1.397650I$ $d = -0.923621 - 0.707241I$	$0.89345 - 5.67427I$	$-3.40403 + 5.66395I$
$u = 1.268400 - 0.295253I$ $a = 0.028064 - 1.126150I$ $b = 0.27254 + 2.58310I$ $c = 0.406505 + 0.023413I$ $d = 1.45186 - 0.14122I$	$0.89345 - 5.67427I$	$-3.40403 + 5.66395I$
$u = -0.439566 + 0.534727I$ $a = 0.615521 + 0.227907I$ $b = -1.140270 + 0.124755I$ $c = 0.820860 - 0.314763I$ $d = 0.062069 + 0.407256I$	$-2.07115 + 0.86143I$	$-6.44675 + 0.99952I$
$u = -0.439566 + 0.534727I$ $a = 0.615521 + 0.227907I$ $b = -1.140270 + 0.124755I$ $c = 0.487252 + 0.053221I$ $d = 1.028130 - 0.221528I$	$-2.07115 + 0.86143I$	$-6.44675 + 0.99952I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.439566 - 0.534727I$ $a = 0.615521 - 0.227907I$ $b = -1.140270 - 0.124755I$ $c = 0.820860 + 0.314763I$ $d = 0.062069 - 0.407256I$	$-2.07115 - 0.86143I$	$-6.44675 - 0.99952I$
$u = -0.439566 - 0.534727I$ $a = 0.615521 - 0.227907I$ $b = -1.140270 - 0.124755I$ $c = 0.487252 - 0.053221I$ $d = 1.028130 + 0.221528I$	$-2.07115 - 0.86143I$	$-6.44675 - 0.99952I$
$u = -0.089922 + 1.317200I$ $a = 1.071290 + 0.049857I$ $b = 0.363039 + 0.297014I$ $c = 0.481544 - 0.234697I$ $d = 0.678045 + 0.817853I$	$3.24441 + 2.97363I$	$-2.07664 - 2.68538I$
$u = -0.089922 + 1.317200I$ $a = 1.071290 + 0.049857I$ $b = 0.363039 + 0.297014I$ $c = 0.469189 + 0.202331I$ $d = 0.797136 - 0.774990I$	$3.24441 + 2.97363I$	$-2.07664 - 2.68538I$
$u = -0.089922 - 1.317200I$ $a = 1.071290 - 0.049857I$ $b = 0.363039 - 0.297014I$ $c = 0.481544 + 0.234697I$ $d = 0.678045 - 0.817853I$	$3.24441 - 2.97363I$	$-2.07664 + 2.68538I$
$u = -0.089922 - 1.317200I$ $a = 1.071290 - 0.049857I$ $b = 0.363039 - 0.297014I$ $c = 0.469189 - 0.202331I$ $d = 0.797136 + 0.774990I$	$3.24441 - 2.97363I$	$-2.07664 + 2.68538I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.36144$ $a = 0.518847$ $b = 0.534560$ $c = 0.339214 + 1.109820I$ $d = -0.748127 - 0.824063I$	4.11381	0.668270
$u = 1.36144$ $a = 0.518847$ $b = 0.534560$ $c = 0.339214 - 1.109820I$ $d = -0.748127 + 0.824063I$	4.11381	0.668270
$u = -0.610309$ $a = -0.180486$ $b = -0.423225$ $c = 0.465000$ $d = 1.15054$	-2.43031	-0.135410
$u = -0.610309$ $a = -0.180486$ $b = -0.423225$ $c = 2.94194$ $d = -0.660088$	-2.43031	-0.135410
$u = 0.078647 + 0.574169I$ $a = -1.80902 + 0.44215I$ $b = -0.199938 + 0.169761I$ $c = 0.556867 - 0.032704I$ $d = 0.789589 + 0.105100I$	$-2.82359 - 2.30782I$	$-10.11267 + 3.58910I$
$u = 0.078647 + 0.574169I$ $a = -1.80902 + 0.44215I$ $b = -0.199938 + 0.169761I$ $c = -7.02820 - 1.64334I$ $d = -1.134910 + 0.031544I$	$-2.82359 - 2.30782I$	$-10.11267 + 3.58910I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.078647 - 0.574169I$ $a = -1.80902 - 0.44215I$ $b = -0.199938 - 0.169761I$ $c = 0.556867 + 0.032704I$ $d = 0.789589 - 0.105100I$	$-2.82359 + 2.30782I$	$-10.11267 - 3.58910I$
$u = 0.078647 - 0.574169I$ $a = -1.80902 - 0.44215I$ $b = -0.199938 - 0.169761I$ $c = -7.02820 + 1.64334I$ $d = -1.134910 - 0.031544I$	$-2.82359 + 2.30782I$	$-10.11267 - 3.58910I$
$u = -1.47182 + 0.62184I$ $a = -0.151233 + 1.052600I$ $b = -0.10460 - 2.44777I$ $c = 0.387142 - 0.708904I$ $d = -0.406610 + 1.086570I$	$7.69158 - 9.88458I$	$-1.61748 + 5.77638I$
$u = -1.47182 + 0.62184I$ $a = -0.151233 + 1.052600I$ $b = -0.10460 - 2.44777I$ $c = -0.227488 + 1.225540I$ $d = -1.146420 - 0.788786I$	$7.69158 - 9.88458I$	$-1.61748 + 5.77638I$
$u = -1.47182 - 0.62184I$ $a = -0.151233 - 1.052600I$ $b = -0.10460 + 2.44777I$ $c = 0.387142 + 0.708904I$ $d = -0.406610 - 1.086570I$	$7.69158 + 9.88458I$	$-1.61748 - 5.77638I$
$u = -1.47182 - 0.62184I$ $a = -0.151233 - 1.052600I$ $b = -0.10460 + 2.44777I$ $c = -0.227488 - 1.225540I$ $d = -1.146420 + 0.788786I$	$7.69158 + 9.88458I$	$-1.61748 - 5.77638I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.52621 + 0.50989I$ $a = -0.106415 - 0.861647I$ $b = 0.45672 + 2.19157I$ $c = 0.360132 + 0.757386I$ $d = -0.487960 - 1.076860I$	$8.58220 + 3.56941I$	$-0.284129 - 1.007355I$
$u = 1.52621 + 0.50989I$ $a = -0.106415 - 0.861647I$ $b = 0.45672 + 2.19157I$ $c = -0.127382 - 1.185430I$ $d = -1.089610 + 0.833946I$	$8.58220 + 3.56941I$	$-0.284129 - 1.007355I$
$u = 1.52621 - 0.50989I$ $a = -0.106415 + 0.861647I$ $b = 0.45672 - 2.19157I$ $c = 0.360132 - 0.757386I$ $d = -0.487960 + 1.076860I$	$8.58220 - 3.56941I$	$-0.284129 + 1.007355I$
$u = 1.52621 - 0.50989I$ $a = -0.106415 + 0.861647I$ $b = 0.45672 - 2.19157I$ $c = -0.127382 + 1.185430I$ $d = -1.089610 - 0.833946I$	$8.58220 - 3.56941I$	$-0.284129 + 1.007355I$

III. $I_1^v = \langle a,\ d,\ c-1,\ b+1,\ v^2+v+1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4v - 5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$v = -0.500000 + 0.866025I$ $a = 0$ $b = -1.00000$ $c = 1.00000$ $d = 0$	$-1.64493 + 2.02988I$	$-3.00000 - 3.46410I$
$v = -0.500000 - 0.866025I$ $a = 0$ $b = -1.00000$ $c = 1.00000$ $d = 0$	$-1.64493 - 2.02988I$	$-3.00000 + 3.46410I$

IV. $I_2^v = \langle a,\ d-1,\ c+a-1,\ b+1,\ v^2+v+1 \rangle$

(i) Arc colorings

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

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

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

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

$$a_6 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

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

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

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4v - 5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -0.500000 + 0.866025I$ $a = 0$ $b = -1.00000$ $c = 1.00000$ $d = 1.00000$	$-1.64493 + 2.02988I$	$-3.00000 - 3.46410I$
$v = -0.500000 - 0.866025I$ $a = 0$ $b = -1.00000$ $c = 1.00000$ $d = 1.00000$	$-1.64493 - 2.02988I$	$-3.00000 + 3.46410I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$		
$a = -1.00000$		
$b = \quad 0$	-3.28987	-12.0000
$c = \quad 0$		
$d = \quad 1.00000$		

VI. $I_4^v = \langle c,\ d-1,\ v^2ba + v^2b - av + c - v - 1,\ b^2v^2 - bv + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -a^3v - 3a^2v - 7av - v^2 - 5v - 12$

(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^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = \cdots$ $a = \cdots$ $b = \cdots$ $c = \cdots$ $d = \cdots$	$-3.28987 + 2.02988I$	$-11.14313 + 3.39027I$

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u^2-u+1)^2(u^{20}+6u^{19}+\cdots-2u+1)^2$ $\cdot(u^{28}+9u^{27}+\cdots-56u+16)$
c_2	$u(u^2+u+1)^2(u^{20}+2u^{19}+\cdots-2u+1)^2(u^{28}+u^{27}+\cdots+8u+4)$
c_3	$u(u^2-u+1)^2(u^{20}-2u^{19}+\cdots+36u+17)^2$ $\cdot(u^{28}-u^{27}+\cdots+1736u+1252)$
c_4, c_8	$u^5(u^{20}+u^{19}+\cdots-8u-4)^2(u^{28}-3u^{27}+\cdots-64u+32)$
c_5	$u(u^2-u+1)^2(u^{20}+2u^{19}+\cdots-2u+1)^2(u^{28}+u^{27}+\cdots+8u+4)$
c_6	$u^2(u-1)^2(u+1)(u^{28}-5u^{27}+\cdots-3u+1)$ $\cdot(u^{40}-3u^{39}+\cdots+40u-16)$
c_7	$u^2(u-1)^3(u^{28}-5u^{27}+\cdots-3u+1)(u^{40}-3u^{39}+\cdots+40u-16)$
c_9	$u^2(u+1)^3(u^{28}-5u^{27}+\cdots-3u+1)(u^{40}-3u^{39}+\cdots+40u-16)$
c_{10}, c_{12}	$u^2(u+1)^3(u^{28}+9u^{27}+\cdots+u+1)(u^{40}+19u^{39}+\cdots+288u+256)$
c_{11}	$u^2(u-1)(u+1)^2(u^{28}-5u^{27}+\cdots-3u+1)$ $\cdot(u^{40}-3u^{39}+\cdots+40u-16)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y^2+y+1)^2(y^{20}+18y^{19}+\cdots-86y+1)^2$ $\cdot(y^{28}+21y^{27}+\cdots-6432y+256)$
c_2, c_5	$y(y^2+y+1)^2(y^{20}+6y^{19}+\cdots-2y+1)^2$ $\cdot(y^{28}+9y^{27}+\cdots-56y+16)$
c_3	$y(y^2+y+1)^2(y^{20}+30y^{19}+\cdots+1254y+289)^2$ $\cdot(y^{28}+33y^{27}+\cdots-17874936y+1567504)$
c_4, c_8	$y^5(y^{20}-15y^{19}+\cdots-24y+16)^2$ $\cdot(y^{28}-15y^{27}+\cdots+3072y+1024)$
c_6, c_7, c_9 c_{11}	$y^2(y-1)^3(y^{28}-9y^{27}+\cdots-y+1)(y^{40}-19y^{39}+\cdots-288y+256)$
c_{10}, c_{12}	$y^2(y-1)^3(y^{28}+31y^{27}+\cdots+39y+1)$ $\cdot(y^{40}+y^{39}+\cdots-4022784y+65536)$