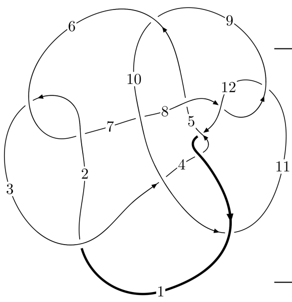
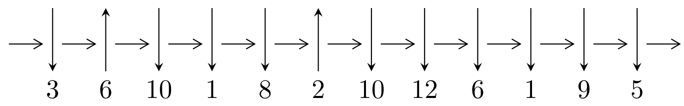
$12n_{0527}$ ($K12n_{0527}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 378975u^{30} + 3018590u^{29} + \cdots + 228821b - 6857553,$$
$$12363803u^{30} + 93404174u^{29} + \cdots + 2288210a - 220745786,\ u^{31} + 8u^{30} + \cdots - 62u - 10\rangle$$
$$I_2^u = \langle 3u^{18} - 6u^{17} + \cdots + 2b + 2,\ -2u^{18}a + 10u^{18} + \cdots - 3a + 21,\ u^{19} - 3u^{18} + \cdots + 6u - 1\rangle$$
$$I_3^u = \langle u^{14} - 4u^{13} + 12u^{12} - 24u^{11} + 40u^{10} - 52u^9 + 57u^8 - 49u^7 + 34u^6 - 18u^5 + 6u^4 - 2u^3 + b - u - 1,$$
$$u^{14} - 3u^{13} + 7u^{12} - 8u^{11} + 4u^{10} + 12u^9 - 34u^8 + 58u^7 - 68u^6 + 62u^5 - 44u^4 + 24u^3 - 11u^2 + 2a + 5u - 4,$$
$$u^{15} - 5u^{14} + \cdots + 4u - 2\rangle$$
$$I_4^u = \langle a^3u - a^3 + a^2u - a^2 + 3au + 3b + u - 1,\ a^4 - 3a^2u - a^2 + 2au + 2a - 2u - 2,\ u^2 + u + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 92 representations.

[1]The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

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

I. $\boldsymbol{I_1^u = \langle 3.79 \times 10^5 u^{30} + 3.02 \times 10^6 u^{29} + \cdots + 2.29 \times 10^5 b - 6.86 \times 10^6,\ 1.24 \times 10^7 u^{30} + 9.34 \times 10^7 u^{29} + \cdots + 2.29 \times 10^6 a - 2.21 \times 10^8,\ u^{31} + 8u^{30} + \cdots - 62u - 10 \rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -5.40326u^{30} - 40.8198u^{29} + \cdots + 422.621u + 96.4709 \\ -1.65621u^{30} - 13.1919u^{29} + \cdots + 143.370u + 29.9691 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -7.59786u^{30} - 57.1445u^{29} + \cdots + 582.083u + 133.417 \\ -2.53663u^{30} - 19.5572u^{29} + \cdots + 189.049u + 39.5947 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -5.06123u^{30} - 37.5873u^{29} + \cdots + 394.034u + 92.8223 \\ -1.48595u^{30} - 10.9890u^{29} + \cdots + 92.6272u + 21.5867 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -2.01783u^{30} - 15.2733u^{29} + \cdots + 183.285u + 43.3542 \\ -0.349286u^{30} - 3.00908u^{29} + \cdots + 131.287u + 29.6924 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -4.17727u^{30} - 31.3609u^{29} + \cdots + 302.304u + 68.6386 \\ -2.36578u^{30} - 18.6263u^{29} + \cdots + 194.064u + 41.2391 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -5.40326u^{30} - 40.8198u^{29} + \cdots + 422.621u + 96.4709 \\ -0.906058u^{30} - 7.88315u^{29} + \cdots + 48.2085u + 5.90550 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 2.85487u^{30} + 20.6866u^{29} + \cdots - 172.102u - 39.1897 \\ -0.816394u^{30} - 6.48291u^{29} + \cdots + 188.974u + 41.4018 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{1324375}{228821}u^{30} - \frac{9572041}{228821}u^{29} + \cdots + \frac{117530906}{228821}u + \frac{30556088}{228821}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{31} + 20u^{30} + \cdots + 684u - 100$
c_2, c_6	$u^{31} - 8u^{30} + \cdots - 62u + 10$
c_3, c_9	$u^{31} + u^{30} + \cdots + u + 1$
c_4, c_5, c_{12}	$u^{31} - u^{30} + \cdots + 4u + 1$
c_7, c_{10}	$u^{31} - 3u^{30} + \cdots + 5u + 1$
c_8, c_{11}	$u^{31} - 11u^{30} + \cdots - 122u + 10$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{31} - 12y^{30} + \cdots + 1252656y - 10000$
c_2, c_6	$y^{31} + 20y^{30} + \cdots + 684y - 100$
c_3, c_9	$y^{31} - 29y^{30} + \cdots + 23y - 1$
c_4, c_5, c_{12}	$y^{31} + 25y^{30} + \cdots - 6y - 1$
c_7, c_{10}	$y^{31} - 29y^{30} + \cdots - 105y - 1$
c_8, c_{11}	$y^{31} + 11y^{30} + \cdots - 756y - 100$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.443501+0.881894I$ $a=-1.036980-0.315517I$ $b=-1.093880-0.219923I$	$1.62568-2.07908I$	$-8.15071+3.76851I$
$u=-0.443501-0.881894I$ $a=-1.036980+0.315517I$ $b=-1.093880+0.219923I$	$1.62568+2.07908I$	$-8.15071-3.76851I$
$u=-0.123465+0.920678I$ $a=-0.63652+1.53942I$ $b=\ \ 0.45891+1.91281I$	$2.16097-0.39271I$	$-5.96156-1.22021I$
$u=-0.123465-0.920678I$ $a=-0.63652-1.53942I$ $b=\ \ 0.45891-1.91281I$	$2.16097+0.39271I$	$-5.96156+1.22021I$
$u=\ \ 0.068946+1.101890I$ $a=\ \ 0.291434-0.967985I$ $b=-0.88132-1.46936I$	$0.870446+0.149756I$	$-6.74421+0.11134I$
$u=\ \ 0.068946-1.101890I$ $a=\ \ 0.291434+0.967985I$ $b=-0.88132+1.46936I$	$0.870446-0.149756I$	$-6.74421-0.11134I$
$u=-1.104440+0.109617I$ $a=-1.138250-0.420860I$ $b=\ \ 0.173388-0.107344I$	$-4.10069-3.26217I$	$-7.80399+3.14222I$
$u=-1.104440-0.109617I$ $a=-1.138250+0.420860I$ $b=\ \ 0.173388+0.107344I$	$-4.10069+3.26217I$	$-7.80399-3.14222I$
$u=-1.120450+0.048451I$ $a=\ \ 1.313720-0.318482I$ $b=-0.155061+0.121217I$	$-1.92223+10.09630I$	$-6.60164-5.79982I$
$u=-1.120450-0.048451I$ $a=\ \ 1.313720+0.318482I$ $b=-0.155061-0.121217I$	$-1.92223-10.09630I$	$-6.60164+5.79982I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.805043 + 0.864131I$ $a = 0.256473 + 0.055333I$ $b = -0.056375 - 0.617551I$	$6.77889 + 0.72800I$	$1.42894 - 3.61029I$
$u = 0.805043 - 0.864131I$ $a = 0.256473 - 0.055333I$ $b = -0.056375 + 0.617551I$	$6.77889 - 0.72800I$	$1.42894 + 3.61029I$
$u = 0.106357 + 1.194790I$ $a = -0.585604 + 0.611175I$ $b = 0.11850 + 1.64905I$	$-4.49263 + 1.56261I$	$-18.4490 - 2.4112I$
$u = 0.106357 - 1.194790I$ $a = -0.585604 - 0.611175I$ $b = 0.11850 - 1.64905I$	$-4.49263 - 1.56261I$	$-18.4490 + 2.4112I$
$u = -0.255201 + 0.720413I$ $a = 0.353004 - 0.498369I$ $b = 0.074523 - 0.477887I$	$-0.379147 - 1.186170I$	$-4.44708 + 5.86244I$
$u = -0.255201 - 0.720413I$ $a = 0.353004 + 0.498369I$ $b = 0.074523 + 0.477887I$	$-0.379147 + 1.186170I$	$-4.44708 - 5.86244I$
$u = -0.287076 + 1.208000I$ $a = 0.591625 - 1.023160I$ $b = 0.45808 - 2.00681I$	$-0.11428 - 4.16519I$	$-8.00000 + 3.45619I$
$u = -0.287076 - 1.208000I$ $a = 0.591625 + 1.023160I$ $b = 0.45808 + 2.00681I$	$-0.11428 + 4.16519I$	$-8.00000 - 3.45619I$
$u = 0.839144 + 0.959645I$ $a = -0.126368 + 0.182032I$ $b = 0.546509 + 0.211498I$	$6.52389 + 5.44822I$	$-3.50283 + 0.I$
$u = 0.839144 - 0.959645I$ $a = -0.126368 - 0.182032I$ $b = 0.546509 - 0.211498I$	$6.52389 - 5.44822I$	$-3.50283 + 0.I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.55841 + 1.36375I$ $a = -0.031464 - 1.250450I$ $b = 0.13295 - 2.63897I$	$-6.0602 - 16.0464I$	0
$u = -0.55841 - 1.36375I$ $a = -0.031464 + 1.250450I$ $b = 0.13295 + 2.63897I$	$-6.0602 + 16.0464I$	0
$u = -0.523642 + 0.015251I$ $a = 1.36675 + 1.50756I$ $b = 0.340155 + 0.377383I$	$3.48762 - 1.00607I$	$-1.97801 + 2.70347I$
$u = -0.523642 - 0.015251I$ $a = 1.36675 - 1.50756I$ $b = 0.340155 - 0.377383I$	$3.48762 + 1.00607I$	$-1.97801 - 2.70347I$
$u = -0.47698 + 1.40113I$ $a = -0.090020 + 1.114860I$ $b = -0.12726 + 2.47258I$	$-8.91065 - 8.81717I$	0
$u = -0.47698 - 1.40113I$ $a = -0.090020 - 1.114860I$ $b = -0.12726 - 2.47258I$	$-8.91065 + 8.81717I$	0
$u = -0.59892 + 1.37175I$ $a = 0.349486 + 0.852345I$ $b = 0.51025 + 1.90344I$	$-8.00712 - 2.87739I$	0
$u = -0.59892 - 1.37175I$ $a = 0.349486 - 0.852345I$ $b = 0.51025 - 1.90344I$	$-8.00712 + 2.87739I$	0
$u = -0.48869 + 1.42613I$ $a = -0.291444 - 0.902646I$ $b = -0.69470 - 2.05198I$	$-6.65609 + 4.30866I$	0
$u = -0.48869 - 1.42613I$ $a = -0.291444 + 0.902646I$ $b = -0.69470 + 2.05198I$	$-6.65609 - 4.30866I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.322569$ $a = 1.42830$ $b = -0.609341$	-1.08738	-6.65470

II. $\boldsymbol{I_2^u =}$
$\boldsymbol{\langle 3u^{18}-6u^{17}+\cdots+2b+2,\ -2u^{18}a+10u^{18}+\cdots-3a+21,\ u^{19}-3u^{18}+\cdots+6u-1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ -\frac{3}{2}u^{18} + 3u^{17} + \cdots + \frac{9}{2}u - 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{3}{2}u^{18} + 4u^{17} + \cdots + \frac{39}{2}u - 4 \\ -\frac{3}{2}u^{18}a - \frac{1}{2}u^{18} + \cdots - \frac{3}{2}a + 3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{3}{2}u^{18}a + u^{18} + \cdots - \frac{5}{2}a + 4 \\ -\frac{1}{2}u^{18}a - 2u^{18} + \cdots - \frac{3}{2}a + 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^{18} - \frac{5}{2}u^{17} + \cdots + a + \frac{5}{2} \\ -\frac{5}{2}u^{18} + \frac{13}{2}u^{17} + \cdots + 8u - \frac{3}{2} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{1}{2}u^{18}a - \frac{3}{2}u^{18} + \cdots + a - 5 \\ -u^{18}a - \frac{1}{2}u^{18} + \cdots - \frac{5}{2}a + 3 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ -\frac{3}{2}u^{18} + 3u^{17} + \cdots + \frac{9}{2}u - 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{1}{2}u^{18}a + u^{18} + \cdots + \frac{3}{2}a + \frac{5}{2} \\ u^{18}a - \frac{3}{2}u^{18} + \cdots + \frac{1}{2}a + \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -8u^{18} + 25u^{17} - 84u^{16} + 166u^{15} - 312u^{14} + 471u^{13} - 637u^{12} + 808u^{11} - 877u^{10} + 947u^9 - 869u^8 + 754u^7 - 616u^6 + 432u^5 - 334u^4 + 206u^3 - 115u^2 + 43u - 11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{19}+13u^{18}+\cdots+2u-1)^2$
c_2, c_6	$(u^{19}+3u^{18}+\cdots+6u+1)^2$
c_3, c_9	$u^{38}+u^{37}+\cdots+5696u+908$
c_4, c_5, c_{12}	$u^{38}-3u^{37}+\cdots+10u^2+4$
c_7, c_{10}	$u^{38}-5u^{37}+\cdots-28450u+4625$
c_8, c_{11}	$(u^{19}+5u^{18}+\cdots+20u+7)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{19} - 11y^{18} + \cdots + 38y - 1)^2$
c_2, c_6	$(y^{19} + 13y^{18} + \cdots + 2y - 1)^2$
c_3, c_9	$y^{38} - 35y^{37} + \cdots - 10830384y + 824464$
c_4, c_5, c_{12}	$y^{38} + 5y^{37} + \cdots + 80y + 16$
c_7, c_{10}	$y^{38} - 37y^{37} + \cdots + 236310000y + 21390625$
c_8, c_{11}	$(y^{19} + 11y^{18} + \cdots - 300y - 49)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.041110 + 0.058191I$ $a = -1.346300 - 0.087992I$ $b = -0.070727 + 0.324415I$	$-4.78729 - 1.81592I$	$-6.58607 + 3.74202I$
$u = 1.041110 + 0.058191I$ $a = 1.44689 - 0.14447I$ $b = -0.184376 + 0.150737I$	$-4.78729 - 1.81592I$	$-6.58607 + 3.74202I$
$u = 1.041110 - 0.058191I$ $a = -1.346300 + 0.087992I$ $b = -0.070727 - 0.324415I$	$-4.78729 + 1.81592I$	$-6.58607 - 3.74202I$
$u = 1.041110 - 0.058191I$ $a = 1.44689 + 0.14447I$ $b = -0.184376 - 0.150737I$	$-4.78729 + 1.81592I$	$-6.58607 - 3.74202I$
$u = 0.228070 + 1.071510I$ $a = -0.328351 - 0.989425I$ $b = -0.07397 - 3.02445I$	$0.90159 + 7.11721I$	$-6.24817 - 10.02307I$
$u = 0.228070 + 1.071510I$ $a = 1.72904 + 1.08620I$ $b = 1.44083 + 0.92301I$	$0.90159 + 7.11721I$	$-6.24817 - 10.02307I$
$u = 0.228070 - 1.071510I$ $a = -0.328351 + 0.989425I$ $b = -0.07397 + 3.02445I$	$0.90159 - 7.11721I$	$-6.24817 + 10.02307I$
$u = 0.228070 - 1.071510I$ $a = 1.72904 - 1.08620I$ $b = 1.44083 - 0.92301I$	$0.90159 - 7.11721I$	$-6.24817 + 10.02307I$
$u = -0.624126 + 0.935674I$ $a = -0.798110 - 0.979366I$ $b = 0.076909 - 1.392880I$	$2.36034 - 1.09097I$	$-8.98199 - 1.95962I$
$u = -0.624126 + 0.935674I$ $a = -0.346295 - 0.494801I$ $b = -1.004870 - 0.509384I$	$2.36034 - 1.09097I$	$-8.98199 - 1.95962I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.624126 - 0.935674I$ $a = -0.798110 + 0.979366I$ $b = 0.076909 + 1.392880I$	$2.36034 + 1.09097I$	$-8.98199 + 1.95962I$
$u = -0.624126 - 0.935674I$ $a = -0.346295 + 0.494801I$ $b = -1.004870 + 0.509384I$	$2.36034 + 1.09097I$	$-8.98199 + 1.95962I$
$u = -0.616732 + 0.611232I$ $a = 0.432266 + 0.956807I$ $b = 0.430328 - 0.206177I$	$3.24466 - 3.79929I$	$-3.99786 + 7.09998I$
$u = -0.616732 + 0.611232I$ $a = 1.37057 + 0.50609I$ $b = 0.46061 + 1.35578I$	$3.24466 - 3.79929I$	$-3.99786 + 7.09998I$
$u = -0.616732 - 0.611232I$ $a = 0.432266 - 0.956807I$ $b = 0.430328 + 0.206177I$	$3.24466 + 3.79929I$	$-3.99786 - 7.09998I$
$u = -0.616732 - 0.611232I$ $a = 1.37057 - 0.50609I$ $b = 0.46061 - 1.35578I$	$3.24466 + 3.79929I$	$-3.99786 - 7.09998I$
$u = 0.081532 + 1.192440I$ $a = -0.965035 + 0.213609I$ $b = -0.296783 + 0.704590I$	$-4.55800 + 1.47269I$	$-15.5511 - 4.2071I$
$u = 0.081532 + 1.192440I$ $a = -0.237799 + 0.845382I$ $b = 0.16123 + 2.37600I$	$-4.55800 + 1.47269I$	$-15.5511 - 4.2071I$
$u = 0.081532 - 1.192440I$ $a = -0.965035 - 0.213609I$ $b = -0.296783 - 0.704590I$	$-4.55800 - 1.47269I$	$-15.5511 + 4.2071I$
$u = 0.081532 - 1.192440I$ $a = -0.237799 - 0.845382I$ $b = 0.16123 - 2.37600I$	$-4.55800 - 1.47269I$	$-15.5511 + 4.2071I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.116911 + 1.229070I$ $a = 0.18036 - 1.53816I$ $b = 0.50210 - 2.49405I$	$-2.01094 - 5.15095I$	$-12.30071 + 5.73853I$
$u = -0.116911 + 1.229070I$ $a = 0.180096 - 0.187932I$ $b = -1.54583 - 0.63107I$	$-2.01094 - 5.15095I$	$-12.30071 + 5.73853I$
$u = -0.116911 - 1.229070I$ $a = 0.18036 + 1.53816I$ $b = 0.50210 + 2.49405I$	$-2.01094 + 5.15095I$	$-12.30071 - 5.73853I$
$u = -0.116911 - 1.229070I$ $a = 0.180096 + 0.187932I$ $b = -1.54583 + 0.63107I$	$-2.01094 + 5.15095I$	$-12.30071 - 5.73853I$
$u = 0.54636 + 1.32865I$ $a = -0.262991 + 1.071060I$ $b = -0.65067 + 2.41212I$	$-8.72835 + 7.47965I$	$-8.40298 - 6.61968I$
$u = 0.54636 + 1.32865I$ $a = 0.186121 - 1.293220I$ $b = -0.03780 - 2.40287I$	$-8.72835 + 7.47965I$	$-8.40298 - 6.61968I$
$u = 0.54636 - 1.32865I$ $a = -0.262991 - 1.071060I$ $b = -0.65067 - 2.41212I$	$-8.72835 - 7.47965I$	$-8.40298 + 6.61968I$
$u = 0.54636 - 1.32865I$ $a = 0.186121 + 1.293220I$ $b = -0.03780 + 2.40287I$	$-8.72835 - 7.47965I$	$-8.40298 + 6.61968I$
$u = 0.47814 + 1.36384I$ $a = 0.059304 - 0.997948I$ $b = 0.53165 - 2.02906I$	$-9.27627 + 3.56613I$	$-9.74898 + 0.43427I$
$u = 0.47814 + 1.36384I$ $a = -0.186195 + 1.207920I$ $b = -0.11776 + 2.60978I$	$-9.27627 + 3.56613I$	$-9.74898 + 0.43427I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.47814 - 1.36384I$ $a = 0.059304 + 0.997948I$ $b = 0.53165 + 2.02906I$	$-9.27627 - 3.56613I$	$-9.74898 - 0.43427I$
$u = 0.47814 - 1.36384I$ $a = -0.186195 - 1.207920I$ $b = -0.11776 - 2.60978I$	$-9.27627 - 3.56613I$	$-9.74898 - 0.43427I$
$u = 0.308272 + 0.388000I$ $a = -2.35893 + 0.54355I$ $b = 0.114594 - 0.630026I$	$2.82450 - 4.64371I$	$-0.81427 + 2.09655I$
$u = 0.308272 + 0.388000I$ $a = 1.78966 + 1.71963I$ $b = 1.44880 + 0.41504I$	$2.82450 - 4.64371I$	$-0.81427 + 2.09655I$
$u = 0.308272 - 0.388000I$ $a = -2.35893 - 0.54355I$ $b = 0.114594 + 0.630026I$	$2.82450 + 4.64371I$	$-0.81427 - 2.09655I$
$u = 0.308272 - 0.388000I$ $a = 1.78966 - 1.71963I$ $b = 1.44880 - 0.41504I$	$2.82450 + 4.64371I$	$-0.81427 - 2.09655I$
$u = 0.348561$ $a = 1.45571 + 0.80946I$ $b = -0.684266 + 0.183801I$	-1.06383	-4.73570
$u = 0.348561$ $a = 1.45571 - 0.80946I$ $b = -0.684266 - 0.183801I$	-1.06383	-4.73570

III.

$\boldsymbol{I_3^u = \langle u^{14}-4u^{13}+\cdots+b-1,\ u^{14}-3u^{13}+\cdots+2a-4,\ u^{15}-5u^{14}+\cdots+4u-2\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5u^{14}+25u^{13}-82u^{12}+189u^{11}-343u^{10}+505u^9-614u^8+627u^7-530u^6+382u^5-230u^4+128u^3-69u^2+30u-22$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{15} - 9u^{14} + \cdots - 36u + 4$
c_2	$u^{15} - 5u^{14} + \cdots + 4u - 2$
c_3, c_9	$u^{15} - u^{14} + \cdots + 2u + 1$
c_4	$u^{15} + u^{14} + \cdots + u + 1$
c_5, c_{12}	$u^{15} - u^{14} + \cdots + u - 1$
c_6	$u^{15} + 5u^{14} + \cdots + 4u + 2$
c_7, c_{10}	$u^{15} - 3u^{14} + \cdots - 2u - 1$
c_8	$u^{15} - 8u^{14} + \cdots - 13u^2 + 2$
c_{11}	$u^{15} + 8u^{14} + \cdots + 13u^2 - 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{15} + y^{14} + \cdots + 8y - 16$
c_2, c_6	$y^{15} + 9y^{14} + \cdots - 36y - 4$
c_3, c_9	$y^{15} - 7y^{14} + \cdots + 10y - 1$
c_4, c_5, c_{12}	$y^{15} + 7y^{14} + \cdots - 3y - 1$
c_7, c_{10}	$y^{15} - 15y^{14} + \cdots + 2y - 1$
c_8, c_{11}	$y^{15} + 4y^{14} + \cdots + 52y - 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.04105$ $a = -1.34448$ $b = 0.0574551$	-5.05234	-7.86790
$u = 0.142498 + 1.177400I$ $a = 0.797818 + 0.992560I$ $b = 0.36789 + 2.16887I$	$-0.25982 + 6.07751I$	$-9.42891 - 6.08368I$
$u = 0.142498 - 1.177400I$ $a = 0.797818 - 0.992560I$ $b = 0.36789 - 2.16887I$	$-0.25982 - 6.07751I$	$-9.42891 + 6.08368I$
$u = -0.148124 + 1.190680I$ $a = -0.655334 - 0.497245I$ $b = -0.05017 - 1.63184I$	$-4.01281 - 1.46048I$	$-1.86959 - 1.16010I$
$u = -0.148124 - 1.190680I$ $a = -0.655334 + 0.497245I$ $b = -0.05017 + 1.63184I$	$-4.01281 + 1.46048I$	$-1.86959 + 1.16010I$
$u = 0.887881 + 0.860290I$ $a = 0.167268 - 0.597728I$ $b = -0.258465 - 0.613512I$	$6.43693 + 6.13733I$	$-4.68757 - 9.65401I$
$u = 0.887881 - 0.860290I$ $a = 0.167268 + 0.597728I$ $b = -0.258465 + 0.613512I$	$6.43693 - 6.13733I$	$-4.68757 + 9.65401I$
$u = 0.875773 + 0.967963I$ $a = -0.497404 + 0.294113I$ $b = -0.306201 + 0.669414I$	$6.12254 + 0.37048I$	$-8.78610 + 1.49023I$
$u = 0.875773 - 0.967963I$ $a = -0.497404 - 0.294113I$ $b = -0.306201 - 0.669414I$	$6.12254 - 0.37048I$	$-8.78610 - 1.49023I$
$u = 0.033850 + 0.679992I$ $a = 1.52172 - 0.70551I$ $b = 1.200660 + 0.615415I$	$1.81263 - 5.19090I$	$-8.70220 + 5.73716I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.033850 - 0.679992I$ $a = 1.52172 + 0.70551I$ $b = 1.200660 - 0.615415I$	$1.81263 + 5.19090I$	$-8.70220 - 5.73716I$
$u = -0.336015 + 0.511815I$ $a = 0.171836 + 0.846334I$ $b = -0.756395 - 0.011183I$	$-1.61892 - 0.67704I$	$-12.66646 + 4.31369I$
$u = -0.336015 - 0.511815I$ $a = 0.171836 - 0.846334I$ $b = -0.756395 + 0.011183I$	$-1.61892 + 0.67704I$	$-12.66646 - 4.31369I$
$u = 0.52361 + 1.34992I$ $a = 0.166332 - 1.108050I$ $b = 0.27395 - 2.30620I$	$-9.24424 + 5.57231I$	$-9.92521 - 3.30109I$
$u = 0.52361 - 1.34992I$ $a = 0.166332 + 1.108050I$ $b = 0.27395 + 2.30620I$	$-9.24424 - 5.57231I$	$-9.92521 + 3.30109I$

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

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u+1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ -\frac{1}{3}a^3u - \frac{1}{3}a^2u + \cdots + \frac{1}{3}a^2 + \frac{1}{3} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{3}a^3u - \frac{1}{3}a^2u + \cdots - a + \frac{7}{3} \\ -a^3u + a^2 - au - 2a + 3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{2}{3}a^3u - \frac{1}{3}a^2u + \cdots + a - \frac{2}{3} \\ \frac{2}{3}a^3u - \frac{1}{3}a^2u + \cdots + a + \frac{1}{3} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ -u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{1}{3}a^3u + \frac{1}{3}a^2u + \cdots + a + \frac{2}{3} \\ a^3 + a^2 - 2au + 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{2}{3}a^3u + \frac{1}{3}a^2u + \cdots - 2a + \frac{11}{3} \\ -\frac{4}{3}a^3u + \frac{2}{3}a^2u + \cdots - 3a + \frac{13}{3} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ -\frac{1}{3}a^3u - \frac{1}{3}a^2u + \cdots + a + \frac{1}{3} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} a^3u + a^3 - au + 2a + u \\ a^3u + a^3 - a^2u - au + 2a + u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$(u^2 - u + 1)^4$
c_2	$(u^2 + u + 1)^4$
c_3, c_9	$u^8 - 5u^6 + 2u^5 + 11u^4 - 2u^3 - 6u^2 + 4u + 4$
c_4	$u^8 + 2u^7 + 7u^6 + 8u^5 + 15u^4 + 10u^3 + 10u^2 + 4u + 4$
c_5, c_{12}	$u^8 - 2u^7 + 7u^6 - 8u^5 + 15u^4 - 10u^3 + 10u^2 - 4u + 4$
c_7, c_8, c_{10} c_{11}	$(u^2 + 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6	$(y^2+y+1)^4$
c_3, c_9	$y^8-10y^7+47y^6-126y^5+197y^4-192y^3+140y^2-64y+16$
c_4, c_5, c_{12}	$y^8+10y^7+47y^6+126y^5+197y^4+192y^3+140y^2+64y+16$
c_7, c_8, c_{10} c_{11}	$(y+1)^8$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.500000+0.866025I$ $a=\ \ 0.178142-0.892797I$ $b=-0.687884-0.392797I$	$3.28987-2.02988I$	$-2.00000+3.46410I$
$u=-0.500000+0.866025I$ $a=\ \ 0.603323+0.513523I$ $b=\ \ 1.46935+0.01352I$	$3.28987-2.02988I$	$-2.00000+3.46410I$
$u=-0.500000+0.866025I$ $a=\ \ 0.68788+1.39280I$ $b=-0.17814+1.89280I$	$3.28987-2.02988I$	$-2.00000+3.46410I$
$u=-0.500000+0.866025I$ $a=-1.46935-1.01352I$ $b=-0.60332-1.51352I$	$3.28987-2.02988I$	$-2.00000+3.46410I$
$u=-0.500000-0.866025I$ $a=\ \ 0.178142+0.892797I$ $b=-0.687884+0.392797I$	$3.28987+2.02988I$	$-2.00000-3.46410I$
$u=-0.500000-0.866025I$ $a=\ \ 0.603323-0.513523I$ $b=\ \ 1.46935-0.01352I$	$3.28987+2.02988I$	$-2.00000-3.46410I$
$u=-0.500000-0.866025I$ $a=\ \ 0.68788-1.39280I$ $b=-0.17814-1.89280I$	$3.28987+2.02988I$	$-2.00000-3.46410I$
$u=-0.500000-0.866025I$ $a=-1.46935+1.01352I$ $b=-0.60332+1.51352I$	$3.28987+2.02988I$	$-2.00000-3.46410I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^4)(u^{15}-9u^{14}+\cdots-36u+4)$ $\cdot((u^{19}+13u^{18}+\cdots+2u-1)^2)(u^{31}+20u^{30}+\cdots+684u-100)$
c_2	$((u^2+u+1)^4)(u^{15}-5u^{14}+\cdots+4u-2)(u^{19}+3u^{18}+\cdots+6u+1)^2$ $\cdot(u^{31}-8u^{30}+\cdots-62u+10)$
c_3, c_9	$(u^8-5u^6+\cdots+4u+4)(u^{15}-u^{14}+\cdots+2u+1)$ $\cdot(u^{31}+u^{30}+\cdots+u+1)(u^{38}+u^{37}+\cdots+5696u+908)$
c_4	$(u^8+2u^7+7u^6+8u^5+15u^4+10u^3+10u^2+4u+4)$ $\cdot(u^{15}+u^{14}+\cdots+u+1)(u^{31}-u^{30}+\cdots+4u+1)$ $\cdot(u^{38}-3u^{37}+\cdots+10u^2+4)$
c_5, c_{12}	$(u^8-2u^7+7u^6-8u^5+15u^4-10u^3+10u^2-4u+4)$ $\cdot(u^{15}-u^{14}+\cdots+u-1)(u^{31}-u^{30}+\cdots+4u+1)$ $\cdot(u^{38}-3u^{37}+\cdots+10u^2+4)$
c_6	$((u^2-u+1)^4)(u^{15}+5u^{14}+\cdots+4u+2)(u^{19}+3u^{18}+\cdots+6u+1)^2$ $\cdot(u^{31}-8u^{30}+\cdots-62u+10)$
c_7, c_{10}	$((u^2+1)^4)(u^{15}-3u^{14}+\cdots-2u-1)(u^{31}-3u^{30}+\cdots+5u+1)$ $\cdot(u^{38}-5u^{37}+\cdots-28450u+4625)$
c_8	$((u^2+1)^4)(u^{15}-8u^{14}+\cdots-13u^2+2)(u^{19}+5u^{18}+\cdots+20u+7)^2$ $\cdot(u^{31}-11u^{30}+\cdots-122u+10)$
c_{11}	$((u^2+1)^4)(u^{15}+8u^{14}+\cdots+13u^2-2)(u^{19}+5u^{18}+\cdots+20u+7)^2$ $\cdot(u^{31}-11u^{30}+\cdots-122u+10)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^4)(y^{15}+y^{14}+\cdots+8y-16)$ $\cdot(y^{19}-11y^{18}+\cdots+38y-1)^2$ $\cdot(y^{31}-12y^{30}+\cdots+1252656y-10000)$
c_2, c_6	$((y^2+y+1)^4)(y^{15}+9y^{14}+\cdots-36y-4)$ $\cdot((y^{19}+13y^{18}+\cdots+2y-1)^2)(y^{31}+20y^{30}+\cdots+684y-100)$
c_3, c_9	$(y^8-10y^7+47y^6-126y^5+197y^4-192y^3+140y^2-64y+16)$ $\cdot(y^{15}-7y^{14}+\cdots+10y-1)(y^{31}-29y^{30}+\cdots+23y-1)$ $\cdot(y^{38}-35y^{37}+\cdots-10830384y+824464)$
c_4, c_5, c_{12}	$(y^8+10y^7+47y^6+126y^5+197y^4+192y^3+140y^2+64y+16)$ $\cdot(y^{15}+7y^{14}+\cdots-3y-1)(y^{31}+25y^{30}+\cdots-6y-1)$ $\cdot(y^{38}+5y^{37}+\cdots+80y+16)$
c_7, c_{10}	$((y+1)^8)(y^{15}-15y^{14}+\cdots+2y-1)(y^{31}-29y^{30}+\cdots-105y-1)$ $\cdot(y^{38}-37y^{37}+\cdots+236310000y+21390625)$
c_8, c_{11}	$((y+1)^8)(y^{15}+4y^{14}+\cdots+52y-4)$ $\cdot((y^{19}+11y^{18}+\cdots-300y-49)^2)(y^{31}+11y^{30}+\cdots-756y-100)$