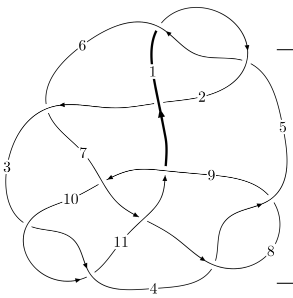
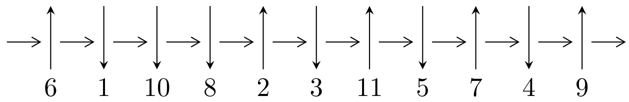
$11a_{99}$ ($K11a_{99}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u &= \langle -3u^{27} - 26u^{26} + \cdots + 2b - 6,\ 9u^{27} + 72u^{26} + \cdots + 4a + 84,\ u^{28} + 6u^{27} + \cdots + 26u + 4\rangle \\
I_2^u &= \langle 5947395u^9a^3 - 110563267u^9a^2 + \cdots + 261341462a - 88347236,\ -u^9a^3 - 5u^9a^2 + \cdots - 8a - 7, \\
&\quad u^{10} - u^9 + 3u^8 - 3u^7 + 5u^6 - 5u^5 + 4u^4 - 4u^3 + 3u^2 - 2u + 1\rangle \\
I_3^u &= \langle u^{11} - u^{10} + 4u^9 - 3u^8 + 7u^7 - 4u^6 + 4u^5 - u^3 + 3u^2 + b - 2u + 3, \\
&\quad -2u^{12} + u^{11} - 6u^{10} + u^9 - 8u^8 - u^7 - 2u^6 - 4u^5 + u^4 - 2u^3 + a - 2u - 2, \\
&\quad u^{13} - u^{12} + 4u^{11} - 3u^{10} + 7u^9 - 4u^8 + 5u^7 - u^6 + 2u^4 - 2u^3 + 3u^2 - u + 1\rangle \\
I_4^u &= \langle a^3u - a^2u^2 + a^2u + u^2a - a^2 + 4u^2 + b + a - 2u + 5, \\
&\quad a^4 - 3a^2u^2 + a^3 + 3a^2u - 3u^2a - 4a^2 + 3au + 9u^2 - 4a - 6u + 13,\ u^3 + u + 1\rangle
\end{aligned}
$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 93 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. $I_1^u = \langle -3u^{27} - 26u^{26} + \cdots + 2b - 6,\ 9u^{27} + 72u^{26} + \cdots + 4a + 84,\ u^{28} + 6u^{27} + \cdots + 26u + 4\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}u^2+1\\u^4\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-u^5-2u^3-u\\-u^7-u^5+u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-\frac{9}{4}u^{27}-18u^{26}+\cdots-\frac{513}{4}u-21\\\frac{3}{2}u^{27}+13u^{26}+\cdots+\frac{77}{2}u+3\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}\frac{11}{4}u^{27}+14u^{26}+\cdots+\frac{143}{4}u+5\\-\frac{5}{2}u^{27}-15u^{26}+\cdots-\frac{127}{2}u-11\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-u\\u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-\frac{21}{4}u^{27}-29u^{26}+\cdots-\frac{449}{4}u-19\\\frac{9}{2}u^{27}+24u^{26}+\cdots+\frac{45}{2}u+1\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-\frac{1}{2}u^{27}-\frac{3}{2}u^{26}+\cdots-\frac{41}{2}u-\frac{7}{2}\\-\frac{5}{2}u^{27}-14u^{26}+\cdots-\frac{55}{2}u-4\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}\frac{1}{2}u^{27}+\frac{9}{2}u^{26}+\cdots+\frac{73}{2}u+\frac{13}{2}\\-\frac{1}{2}u^{27}-3u^{26}+\cdots+\frac{7}{2}u+2\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}\frac{1}{2}u^{27}+\frac{9}{2}u^{26}+\cdots+\frac{73}{2}u+\frac{13}{2}\\-\frac{1}{2}u^{27}-3u^{26}+\cdots+\frac{7}{2}u+2\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -13u^{27} - 78u^{26} - 316u^{25} - 906u^{24} - 2126u^{23} - 4197u^{22} - 7359u^{21} - 11710u^{20} - 17291u^{19} - 23878u^{18} - 30954u^{17} - 37835u^{16} - 43786u^{15} - 48249u^{14} - 50700u^{13} - 50669u^{12} - 48099u^{11} - 43213u^{10} - 36755u^9 - 29326u^8 - 21691u^7 - 14716u^6 - 9106u^5 - 5172u^4 - 2641u^3 - 1112u^2 - 342u - 54$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$u^{28} - 6u^{27} + \cdots - 26u + 4$
c_2	$u^{28} + 14u^{27} + \cdots + 36u + 16$
c_3, c_4, c_8 c_{10}	$u^{28} + u^{27} + \cdots + 3u + 1$
c_6	$u^{28} + 6u^{27} + \cdots + 1800u + 712$
c_7	$u^{28} - 29u^{27} + \cdots - 118784u + 8192$
c_9, c_{11}	$u^{28} - 2u^{27} + \cdots - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y^{28} + 14y^{27} + \cdots + 36y + 16$
c_2	$y^{28} - 2y^{27} + \cdots - 240y + 256$
c_3, c_4, c_8 c_{10}	$y^{28} - 23y^{27} + \cdots + 3y + 1$
c_6	$y^{28} - 18y^{27} + \cdots + 1943360y + 506944$
c_7	$y^{28} + 3y^{27} + \cdots + 486539264y + 67108864$
c_9, c_{11}	$y^{28} + 6y^{27} + \cdots + 40y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.007890 + 0.244456I$ $a = 0.648218 + 0.649776I$ $b = 0.484897 - 0.362346I$	$-5.75558 + 1.16478I$	$-9.81484 - 5.25007I$
$u = -1.007890 - 0.244456I$ $a = 0.648218 - 0.649776I$ $b = 0.484897 + 0.362346I$	$-5.75558 - 1.16478I$	$-9.81484 + 5.25007I$
$u = 0.450069 + 0.945327I$ $a = 0.97063 - 1.16479I$ $b = -0.92359 + 1.77022I$	$1.30775 + 2.44749I$	$-4.69640 - 9.53101I$
$u = 0.450069 - 0.945327I$ $a = 0.97063 + 1.16479I$ $b = -0.92359 - 1.77022I$	$1.30775 - 2.44749I$	$-4.69640 + 9.53101I$
$u = 0.823545 + 0.669603I$ $a = -0.244511 + 1.089610I$ $b = -0.807023 - 0.636285I$	$-2.90686 - 3.71581I$	$-3.96472 + 7.21162I$
$u = 0.823545 - 0.669603I$ $a = -0.244511 - 1.089610I$ $b = -0.807023 + 0.636285I$	$-2.90686 + 3.71581I$	$-3.96472 - 7.21162I$
$u = -0.877743 + 0.205256I$ $a = -1.36751 - 0.95489I$ $b = -0.332382 + 1.109600I$	$-7.91511 + 11.38140I$	$-4.44423 - 5.90932I$
$u = -0.877743 - 0.205256I$ $a = -1.36751 + 0.95489I$ $b = -0.332382 - 1.109600I$	$-7.91511 - 11.38140I$	$-4.44423 + 5.90932I$
$u = 0.693563 + 0.915180I$ $a = -1.289000 - 0.358838I$ $b = 1.64479 - 0.73716I$	$-3.67868 + 9.29135I$	$-4.02619 - 9.42557I$
$u = 0.693563 - 0.915180I$ $a = -1.289000 + 0.358838I$ $b = 1.64479 + 0.73716I$	$-3.67868 - 9.29135I$	$-4.02619 + 9.42557I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.417630+1.105260I$ $a=-0.990060-0.503261I$ $b=\ \ 0.343945+0.624215I$	$-2.12382-1.70105I$	$-2.95787+0.05705I$
$u=-0.417630-1.105260I$ $a=-0.990060+0.503261I$ $b=\ \ 0.343945-0.624215I$	$-2.12382+1.70105I$	$-2.95787-0.05705I$
$u=-0.483475+1.130610I$ $a=\ \ 1.03565+1.24896I$ $b=-0.38060-1.45896I$	$-1.61917-5.94948I$	$-1.73292+6.08838I$
$u=-0.483475-1.130610I$ $a=\ \ 1.03565-1.24896I$ $b=-0.38060+1.45896I$	$-1.61917+5.94948I$	$-1.73292-6.08838I$
$u=\ \ 0.433444+0.634083I$ $a=\ \ 1.80511-0.76581I$ $b=-1.031200+0.788265I$	$2.24308+1.31021I$	$4.48172+2.40271I$
$u=\ \ 0.433444-0.634083I$ $a=\ \ 1.80511+0.76581I$ $b=-1.031200-0.788265I$	$2.24308-1.31021I$	$4.48172-2.40271I$
$u=-0.305330+0.675911I$ $a=-0.630555+0.172210I$ $b=\ \ 0.360299+0.412592I$	$-0.257625-1.154960I$	$-2.96071+5.77634I$
$u=-0.305330-0.675911I$ $a=-0.630555-0.172210I$ $b=\ \ 0.360299-0.412592I$	$-0.257625+1.154960I$	$-2.96071-5.77634I$
$u=-0.315106+1.262770I$ $a=\ \ 0.488001+0.002907I$ $b=\ \ 0.100408+1.021430I$	$-12.6068+7.4137I$	$-9.32623-3.45211I$
$u=-0.315106-1.262770I$ $a=\ \ 0.488001-0.002907I$ $b=\ \ 0.100408-1.021430I$	$-12.6068-7.4137I$	$-9.32623+3.45211I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.554721 + 1.203480I$ $a = -1.83799 - 0.92930I$ $b = 1.96223 + 2.11484I$	$-10.9151 - 16.6086I$	$-7.19926 + 9.00617I$
$u = -0.554721 - 1.203480I$ $a = -1.83799 + 0.92930I$ $b = 1.96223 - 2.11484I$	$-10.9151 + 16.6086I$	$-7.19926 - 9.00617I$
$u = -0.243939 + 1.326510I$ $a = -0.0674133 + 0.0418679I$ $b = -0.033141 - 1.007620I$	$-11.26130 - 3.02152I$	$-13.62827 + 2.14467I$
$u = -0.243939 - 1.326510I$ $a = -0.0674133 - 0.0418679I$ $b = -0.033141 + 1.007620I$	$-11.26130 + 3.02152I$	$-13.62827 - 2.14467I$
$u = -0.608424 + 0.177740I$ $a = 0.665110 - 0.192137I$ $b = -0.474963 - 0.907755I$	$1.04620 + 1.66789I$	$3.14449 - 2.66380I$
$u = -0.608424 - 0.177740I$ $a = 0.665110 + 0.192137I$ $b = -0.474963 + 0.907755I$	$1.04620 - 1.66789I$	$3.14449 + 2.66380I$
$u = -0.586363 + 1.242360I$ $a = 1.064320 + 0.381059I$ $b = -1.41368 - 1.21973I$	$-8.88695 - 6.88314I$	$-9.37455 + 6.80974I$
$u = -0.586363 - 1.242360I$ $a = 1.064320 - 0.381059I$ $b = -1.41368 + 1.21973I$	$-8.88695 + 6.88314I$	$-9.37455 - 6.80974I$

II. $I_2^u = \langle 5.95 \times 10^6 a^3 u^9 - 1.11 \times 10^8 a^2 u^9 + \cdots + 2.61 \times 10^8 a - 8.83 \times 10^7,\ -u^9 a^3 - 5u^9 a^2 + \cdots - 8a - 7,\ u^{10} - u^9 + \cdots - 2u + 1\rangle$

(i) Arc colorings

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

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

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

$$a_3 = \begin{pmatrix} u^2 + 1 \\ u^4 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^5 - 2u^3 - u \\ -u^7 - u^5 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a \\ -0.0456620a^3u^9 + 0.848865a^2u^9 + \cdots - 2.00649a + 0.678298 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2.14382a^3u^9 + 1.09367a^2u^9 + \cdots - 1.51933a + 0.196840 \\ -0.260987a^3u^9 + 0.338504a^2u^9 + \cdots + 0.870243a + 2.69447 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 0.0644237a^3u^9 + 0.101106a^2u^9 + \cdots - 1.19004a - 1.96492 \\ -0.110086a^3u^9 + 0.747759a^2u^9 + \cdots + 0.183553a + 2.64322 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.770676a^3u^9 - 0.285432a^2u^9 + \cdots - 0.188169a - 1.85717 \\ -0.0386232a^3u^9 + 0.223455a^2u^9 + \cdots + 1.74875a + 3.11581 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.277440a^3u^9 - 0.327129a^2u^9 + \cdots - 0.0644294a + 0.411808 \\ -0.285316a^3u^9 + 0.175678a^2u^9 + \cdots + 0.268957a - 0.519132 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.277440a^3u^9 - 0.327129a^2u^9 + \cdots - 0.0644294a + 0.411808 \\ -0.285316a^3u^9 + 0.175678a^2u^9 + \cdots + 0.268957a - 0.519132 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{6098888}{7661669}u^9a^3 - \frac{21091308}{7661669}u^9a^2 + \cdots + \frac{116819364}{7661669}a + \frac{59639590}{7661669}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$(u^{10}+u^9+3u^8+3u^7+5u^6+5u^5+4u^4+4u^3+3u^2+2u+1)^4$
c_2	$(u^{10}+5u^9+13u^8+19u^7+17u^6+7u^5-2u^3+u^2+2u+1)^4$
c_3, c_4, c_8 c_{10}	$u^{40}-u^{39}+\cdots-18u^2+1$
c_6	$(u^{10}+2u^9-u^8-5u^7-3u^6+4u^5+12u^4+13u^3+5u^2+u+2)^4$
c_7	$(u^2+u+1)^{20}$
c_9, c_{11}	$u^{40}+11u^{39}+\cdots+644u+61$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$(y^{10} + 5y^9 + 13y^8 + 19y^7 + 17y^6 + 7y^5 - 2y^3 + y^2 + 2y + 1)^4$
c_2	$(y^{10} + y^9 + 13y^8 + 11y^7 + 45y^6 + 35y^5 + 12y^4 + 2y^3 + 9y^2 - 2y + 1)^4$
c_3, c_4, c_8 c_{10}	$y^{40} - 33y^{39} + \cdots - 36y + 1$
c_6	$(y^{10} - 6y^9 + \cdots + 19y + 4)^4$
c_7	$(y^2 + y + 1)^{20}$
c_9, c_{11}	$y^{40} + 11y^{39} + \cdots + 62528y + 3721$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.584958+0.771492I$ $a=-0.811252-0.684607I$ $b=\ \ 0.326566+1.346250I$	$0.002387-0.280172I$	$-1.136314+0.057227I$
$u=-0.584958+0.771492I$ $a=-0.13825+1.48131I$ $b=\ \ 0.856552-0.765235I$	$0.002387-0.280172I$	$-1.136314+0.057227I$
$u=-0.584958+0.771492I$ $a=\ \ 1.41803-0.77086I$ $b=-1.87810-0.26325I$	$0.00239-4.33994I$	$-1.13631+6.98543I$
$u=-0.584958+0.771492I$ $a=-1.63324-0.44978I$ $b=\ \ 0.783367+0.997354I$	$0.00239-4.33994I$	$-1.13631+6.98543I$
$u=-0.584958-0.771492I$ $a=-0.811252+0.684607I$ $b=\ \ 0.326566-1.346250I$	$0.002387+0.280172I$	$-1.136314-0.057227I$
$u=-0.584958-0.771492I$ $a=-0.13825-1.48131I$ $b=\ \ 0.856552+0.765235I$	$0.002387+0.280172I$	$-1.136314-0.057227I$
$u=-0.584958-0.771492I$ $a=\ \ 1.41803+0.77086I$ $b=-1.87810+0.26325I$	$0.00239+4.33994I$	$-1.13631-6.98543I$
$u=-0.584958-0.771492I$ $a=-1.63324+0.44978I$ $b=\ \ 0.783367-0.997354I$	$0.00239+4.33994I$	$-1.13631-6.98543I$
$u=\ \ 0.248527+0.782547I$ $a=-0.528657+0.220233I$ $b=\ \ 0.80276-1.85708I$	$-5.38286+3.26157I$	$-6.90177-8.91318I$
$u=\ \ 0.248527+0.782547I$ $a=-0.77879+1.65055I$ $b=-0.1103870-0.0163537I$	$-5.38286-0.79819I$	$-6.90177-1.98497I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.248527 + 0.782547I$ $a = -2.16490 - 1.33388I$ $b = 2.78977 + 0.25266I$	$-5.38286 - 0.79819I$	$-6.90177 - 1.98497I$
$u = 0.248527 + 0.782547I$ $a = 2.27476 + 2.17074I$ $b = -1.93781 - 0.58149I$	$-5.38286 + 3.26157I$	$-6.90177 - 8.91318I$
$u = 0.248527 - 0.782547I$ $a = -0.528657 - 0.220233I$ $b = 0.80276 + 1.85708I$	$-5.38286 - 3.26157I$	$-6.90177 + 8.91318I$
$u = 0.248527 - 0.782547I$ $a = -0.77879 - 1.65055I$ $b = -0.1103870 + 0.0163537I$	$-5.38286 + 0.79819I$	$-6.90177 + 1.98497I$
$u = 0.248527 - 0.782547I$ $a = -2.16490 + 1.33388I$ $b = 2.78977 - 0.25266I$	$-5.38286 + 0.79819I$	$-6.90177 + 1.98497I$
$u = 0.248527 - 0.782547I$ $a = 2.27476 - 2.17074I$ $b = -1.93781 + 0.58149I$	$-5.38286 - 3.26157I$	$-6.90177 + 8.91318I$
$u = 0.761643 + 0.208049I$ $a = -0.888121 - 0.198095I$ $b = 0.169145 - 1.209710I$	$-2.52120 - 5.50828I$	$-2.80497 + 6.25925I$
$u = 0.761643 + 0.208049I$ $a = -1.109160 + 0.691872I$ $b = -0.405801 - 0.684900I$	$-2.52120 - 1.44851I$	$-2.80497 - 0.66896I$
$u = 0.761643 + 0.208049I$ $a = -0.465789 - 0.420142I$ $b = 0.307020 + 0.341147I$	$-2.52120 - 1.44851I$	$-2.80497 - 0.66896I$
$u = 0.761643 + 0.208049I$ $a = 1.44027 - 1.30172I$ $b = 0.177943 + 1.296040I$	$-2.52120 - 5.50828I$	$-2.80497 + 6.25925I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.761643 - 0.208049I$ $a = -0.888121 + 0.198095I$ $b = 0.169145 + 1.209710I$	$-2.52120 + 5.50828I$	$-2.80497 - 6.25925I$
$u = 0.761643 - 0.208049I$ $a = -1.109160 - 0.691872I$ $b = -0.405801 + 0.684900I$	$-2.52120 + 1.44851I$	$-2.80497 + 0.66896I$
$u = 0.761643 - 0.208049I$ $a = -0.465789 + 0.420142I$ $b = 0.307020 - 0.341147I$	$-2.52120 + 1.44851I$	$-2.80497 + 0.66896I$
$u = 0.761643 - 0.208049I$ $a = 1.44027 + 1.30172I$ $b = 0.177943 - 1.296040I$	$-2.52120 + 5.50828I$	$-2.80497 - 6.25925I$
$u = -0.449566 + 1.164790I$ $a = 0.79423 - 1.18245I$ $b = -0.42710 + 2.17011I$	$-9.81146 - 6.17573I$	$-10.98134 + 7.44010I$
$u = -0.449566 + 1.164790I$ $a = 0.152868 - 0.428323I$ $b = -1.107140 - 0.677603I$	$-9.81146 - 2.11597I$	$-10.98134 + 0.51190I$
$u = -0.449566 + 1.164790I$ $a = 1.92707 + 0.90418I$ $b = -1.82941 - 2.34062I$	$-9.81146 - 6.17573I$	$-10.98134 + 7.44010I$
$u = -0.449566 + 1.164790I$ $a = -1.75450 - 1.78926I$ $b = 2.08774 + 2.71705I$	$-9.81146 - 2.11597I$	$-10.98134 + 0.51190I$
$u = -0.449566 - 1.164790I$ $a = 0.79423 + 1.18245I$ $b = -0.42710 - 2.17011I$	$-9.81146 + 6.17573I$	$-10.98134 - 7.44010I$
$u = -0.449566 - 1.164790I$ $a = 0.152868 + 0.428323I$ $b = -1.107140 + 0.677603I$	$-9.81146 + 2.11597I$	$-10.98134 - 0.51190I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.449566-1.164790I$ $a=1.92707-0.90418I$ $b=-1.82941+2.34062I$	$-9.81146+6.17573I$	$-10.98134-7.44010I$
$u=-0.449566-1.164790I$ $a=-1.75450+1.78926I$ $b=2.08774-2.71705I$	$-9.81146+2.11597I$	$-10.98134-0.51190I$
$u=0.524355+1.163410I$ $a=0.740427+0.151085I$ $b=-0.650836-0.191721I$	$-5.31595+6.25643I$	$-6.17560-2.68471I$
$u=0.524355+1.163410I$ $a=-1.43496+0.55642I$ $b=1.51204-1.58158I$	$-5.31595+6.25643I$	$-6.17560-2.68471I$
$u=0.524355+1.163410I$ $a=-1.20657+1.25082I$ $b=0.33739-1.88156I$	$-5.31595+10.31620I$	$-6.17560-9.61291I$
$u=0.524355+1.163410I$ $a=2.16655-1.00309I$ $b=-2.30372+2.02238I$	$-5.31595+10.31620I$	$-6.17560-9.61291I$
$u=0.524355-1.163410I$ $a=0.740427-0.151085I$ $b=-0.650836+0.191721I$	$-5.31595-6.25643I$	$-6.17560+2.68471I$
$u=0.524355-1.163410I$ $a=-1.43496-0.55642I$ $b=1.51204+1.58158I$	$-5.31595-6.25643I$	$-6.17560+2.68471I$
$u=0.524355-1.163410I$ $a=-1.20657-1.25082I$ $b=0.33739+1.88156I$	$-5.31595-10.31620I$	$-6.17560+9.61291I$
$u=0.524355-1.163410I$ $a=2.16655+1.00309I$ $b=-2.30372-2.02238I$	$-5.31595-10.31620I$	$-6.17560+9.61291I$

III.

$\boldsymbol{I_3^u = \langle u^{11} - u^{10} + \cdots + b + 3,\ -2u^{12} + u^{11} + \cdots + a - 2,\ u^{13} - u^{12} + \cdots - u + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_3 = \begin{pmatrix} u^2 + 1 \\ u^4 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^5 - 2u^3 - u \\ -u^7 - u^5 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 2u^{12} - u^{11} + 6u^{10} - u^9 + 8u^8 + u^7 + 2u^6 + 4u^5 - u^4 + 2u^3 + 2u + 2 \\ -u^{11} + u^{10} - 4u^9 + 3u^8 - 7u^7 + 4u^6 - 4u^5 + u^3 - 3u^2 + 2u - 3 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2u^{12} - u^{11} + 6u^{10} - 2u^9 + 8u^8 - u^7 + 2u^6 + 2u^5 - u^4 + 2u^3 + 2u + 2 \\ -u^{11} + u^{10} - 3u^9 + 3u^8 - 5u^7 + 4u^6 - 2u^5 + u^3 - 2u^2 + 2u - 2 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} u^{12} + 3u^{10} + u^9 + 4u^8 + 3u^7 + u^6 + 3u^5 + u^2 + 2 \\ u^{12} - 2u^{11} + \cdots + 4u - 3 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^{12} - u^{11} - 2u^{10} - 4u^9 - 2u^8 - 6u^7 - 3u^5 - u^4 + u^3 - 2u^2 - 3 \\ -2u^{12} + 3u^{11} + \cdots - 5u + 3 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^{12} - 2u^{11} + \cdots + 3u - 2 \\ -2u^{12} + 2u^{11} + \cdots - 4u + 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^{12} - 2u^{11} + \cdots + 3u - 2 \\ -2u^{12} + 2u^{11} + \cdots - 4u + 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 2u^{10} - 4u^9 + 6u^8 - 8u^7 + 7u^6 - 5u^5 + u^4 + 6u^3 - 3u^2 + 3u - 9$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y^{13} + 7y^{12} + \cdots - 5y - 1$
c_2	$y^{13} - y^{12} + \cdots + 7y - 1$
c_3, c_4, c_8 c_{10}	$y^{13} - 15y^{12} + \cdots - 9y - 1$
c_6	$y^{13} - 9y^{12} + \cdots - 11y - 1$
c_7	$y^{13} + 2y^{12} + \cdots - 2y - 1$
c_9, c_{11}	$y^{13} + 2y^{12} + \cdots - 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.429348+0.836369I$ $a=-1.06443-0.95489I$ $b=\ \ 0.90233+1.19418I$	$1.50284-1.80144I$	$-0.975171+0.624326I$
$u=-0.429348-0.836369I$ $a=-1.06443+0.95489I$ $b=\ \ 0.90233-1.19418I$	$1.50284+1.80144I$	$-0.975171-0.624326I$
$u=\ \ 0.777700+0.380482I$ $a=-0.544452+0.841459I$ $b=-0.722544-0.675961I$	$-3.52105-2.68668I$	$-6.71015+2.69355I$
$u=\ \ 0.777700-0.380482I$ $a=-0.544452-0.841459I$ $b=-0.722544+0.675961I$	$-3.52105+2.68668I$	$-6.71015-2.69355I$
$u=-0.851574$ $a=\ \ 1.29542$ $b=\ \ 0.236834$	-5.58548	-6.40050
$u=\ \ 0.354755+1.099910I$ $a=\ \ 0.261043-1.280070I$ $b=\ \ 0.463549+0.404379I$	$-7.44002-0.06234I$	$-10.48891-0.49082I$
$u=\ \ 0.354755-1.099910I$ $a=\ \ 0.261043+1.280070I$ $b=\ \ 0.463549-0.404379I$	$-7.44002+0.06234I$	$-10.48891+0.49082I$
$u=-0.432945+1.190570I$ $a=\ \ 0.574206+0.848947I$ $b=-0.88235-1.94320I$	$-9.24726-4.36417I$	$-9.35230+3.32302I$
$u=-0.432945-1.190570I$ $a=\ \ 0.574206-0.848947I$ $b=-0.88235+1.94320I$	$-9.24726+4.36417I$	$-9.35230-3.32302I$
$u=\ \ 0.555159+1.145130I$ $a=-1.45591+0.17932I$ $b=\ \ 1.45752-1.05620I$	$-5.89830+7.73676I$	$-8.25887-7.75024I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.555159 - 1.145130I$ $a = -1.45591 - 0.17932I$ $b = 1.45752 + 1.05620I$	$-5.89830 - 7.73676I$	$-8.25887 + 7.75024I$
$u = 0.100465 + 0.707437I$ $a = 2.08183 + 1.26835I$ $b = -1.83693 + 0.64675I$	$-5.50214 + 2.30256I$	$-8.51436 - 0.38924I$
$u = 0.100465 - 0.707437I$ $a = 2.08183 - 1.26835I$ $b = -1.83693 - 0.64675I$	$-5.50214 - 2.30256I$	$-8.51436 + 0.38924I$

IV.

$\boldsymbol{I^u_4 = \langle -a^2u^2 + u^2a + \cdots + a + 5,\ -3a^2u^2 - 3u^2a + \cdots - 4a + 13,\ u^3 + u + 1\rangle}$

(i) Arc colorings

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

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

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

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

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

$$a_9 = \begin{pmatrix} a \\ -a^3u + a^2u^2 - a^2u - u^2a + a^2 - 4u^2 - a + 2u - 5 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a^3u^2 + 2a^2u^2 + a^3 - a^2u - u^2a + 3a^2 - 7u^2 - a + 5u - 11 \\ -a^3u^2 - a^3u - a^2u + au - 2u^2 + u - 1 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} a^3u + a^3 + u^2a + a^2 + au - u^2 + a + 2u - 2 \\ -2a^3u + a^2u^2 - a^3 - a^2u - 2u^2a - au - 3u^2 - a - 3 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -a^3u^2 - 3a^2u^2 + \cdots + 3a + 14 \\ -a^3u - a^3 - 2a^2u - 2a^2 - au - 2u + 2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} a^3u^2 + a^2u^2 + a^3 - a^2u - u^2a + 2a^2 + au - 6u^2 - 2a + 4u - 8 \\ a^2u^2 - 2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} a^3u^2 + a^2u^2 + a^3 - a^2u - u^2a + 2a^2 + au - 6u^2 - 2a + 4u - 8 \\ a^2u^2 - 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4a^3u + 4a^2u^2 - 4a^2u - 4u^2a + 4a^2 - 16u^2 - 4a + 8u - 30$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$(u^3+u-1)^4$
c_2	$(u^3+2u^2+u-1)^4$
c_3, c_4, c_8 c_{10}	$u^{12}-6u^{10}+\cdots+8u+1$
c_6	$(u-1)^{12}$
c_7	$(u^2+u+1)^6$
c_9, c_{11}	$u^{12}+4u^{11}+\cdots+32u+13$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$(y^3 + 2y^2 + y - 1)^4$
c_2	$(y^3 - 2y^2 + 5y - 1)^4$
c_3, c_4, c_8 c_{10}	$y^{12} - 12y^{11} + \cdots - 36y + 1$
c_6	$(y - 1)^{12}$
c_7	$(y^2 + y + 1)^6$
c_9, c_{11}	$y^{12} + 8y^{11} + \cdots + 848y + 169$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.341164 + 1.161540I$ $a = -1.034830 + 0.098333I$ $b = 0.500000 + 0.866025I$	$-6.57974 - 2.02988I$	$-8.00000 + 3.46410I$
$u = 0.341164 + 1.161540I$ $a = 0.534830 - 0.964359I$ $b = 0.500000 + 0.866025I$	$-6.57974 - 2.02988I$	$-8.00000 + 3.46410I$
$u = 0.341164 + 1.161540I$ $a = -0.478220 + 1.030980I$ $b = 0.500000 - 0.866025I$	$-6.57974 + 2.02988I$	$-8.00000 - 3.46410I$
$u = 0.341164 + 1.161540I$ $a = -0.021780 - 0.164953I$ $b = 0.500000 - 0.866025I$	$-6.57974 + 2.02988I$	$-8.00000 - 3.46410I$
$u = 0.341164 - 1.161540I$ $a = -1.034830 - 0.098333I$ $b = 0.500000 - 0.866025I$	$-6.57974 + 2.02988I$	$-8.00000 - 3.46410I$
$u = 0.341164 - 1.161540I$ $a = 0.534830 + 0.964359I$ $b = 0.500000 - 0.866025I$	$-6.57974 + 2.02988I$	$-8.00000 - 3.46410I$
$u = 0.341164 - 1.161540I$ $a = -0.478220 - 1.030980I$ $b = 0.500000 + 0.866025I$	$-6.57974 - 2.02988I$	$-8.00000 + 3.46410I$
$u = 0.341164 - 1.161540I$ $a = -0.021780 + 0.164953I$ $b = 0.500000 + 0.866025I$	$-6.57974 - 2.02988I$	$-8.00000 + 3.46410I$
$u = -0.682328$ $a = 1.83446 + 0.06511I$ $b = 0.500000 + 0.866025I$	$-6.57974 - 2.02988I$	$-8.00000 + 3.46410I$
$u = -0.682328$ $a = 1.83446 - 0.06511I$ $b = 0.500000 - 0.866025I$	$-6.57974 + 2.02988I$	$-8.00000 - 3.46410I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.682328$ $a = -2.33446 + 0.93114I$ $b = \quad 0.500000 - 0.866025I$	$-6.57974 + 2.02988I$	$-8.00000 - 3.46410I$
$u = -0.682328$ $a = -2.33446 - 0.93114I$ $b = \quad 0.500000 + 0.866025I$	$-6.57974 - 2.02988I$	$-8.00000 + 3.46410I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^3+u-1)^4$ $\cdot(u^{10}+u^9+3u^8+3u^7+5u^6+5u^5+4u^4+4u^3+3u^2+2u+1)^4$ $\cdot(u^{13}-u^{12}+\cdots-u+1)(u^{28}-6u^{27}+\cdots-26u+4)$
c_2	$(u^3+2u^2+u-1)^4$ $\cdot(u^{10}+5u^9+13u^8+19u^7+17u^6+7u^5-2u^3+u^2+2u+1)^4$ $\cdot(u^{13}+7u^{12}+\cdots-5u-1)(u^{28}+14u^{27}+\cdots+36u+16)$
c_3, c_8	$(u^{12}-6u^{10}+\cdots+8u+1)(u^{13}-u^{12}+\cdots+3u+1)$ $\cdot(u^{28}+u^{27}+\cdots+3u+1)(u^{40}-u^{39}+\cdots-18u^2+1)$
c_4, c_{10}	$(u^{12}-6u^{10}+\cdots+8u+1)(u^{13}+u^{12}+\cdots+3u-1)$ $\cdot(u^{28}+u^{27}+\cdots+3u+1)(u^{40}-u^{39}+\cdots-18u^2+1)$
c_5	$(u^3+u-1)^4$ $\cdot(u^{10}+u^9+3u^8+3u^7+5u^6+5u^5+4u^4+4u^3+3u^2+2u+1)^4$ $\cdot(u^{13}+u^{12}+\cdots-u-1)(u^{28}-6u^{27}+\cdots-26u+4)$
c_6	$(u-1)^{12}$ $\cdot(u^{10}+2u^9-u^8-5u^7-3u^6+4u^5+12u^4+13u^3+5u^2+u+2)^4$ $\cdot(u^{13}-u^{12}+\cdots+u-1)(u^{28}+6u^{27}+\cdots+1800u+712)$
c_7	$((u^2+u+1)^{26})(u^{13}-2u^{12}+\cdots+2u-1)$ $\cdot(u^{28}-29u^{27}+\cdots-118784u+8192)$
c_9, c_{11}	$(u^{12}+4u^{11}+\cdots+32u+13)(u^{13}+2u^{12}+\cdots+2u+1)$ $\cdot(u^{28}-2u^{27}+\cdots-2u+1)(u^{40}+11u^{39}+\cdots+644u+61)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5	$(y^3+2y^2+y-1)^4$ $\cdot(y^{10}+5y^9+13y^8+19y^7+17y^6+7y^5-2y^3+y^2+2y+1)^4$ $\cdot(y^{13}+7y^{12}+\cdots-5y-1)(y^{28}+14y^{27}+\cdots+36y+16)$
c_2	$(y^3-2y^2+5y-1)^4$ $\cdot(y^{10}+y^9+13y^8+11y^7+45y^6+35y^5+12y^4+2y^3+9y^2-2y+1)^4$ $\cdot(y^{13}-y^{12}+\cdots+7y-1)(y^{28}-2y^{27}+\cdots-240y+256)$
c_3, c_4, c_8 c_{10}	$(y^{12}-12y^{11}+\cdots-36y+1)(y^{13}-15y^{12}+\cdots-9y-1)$ $\cdot(y^{28}-23y^{27}+\cdots+3y+1)(y^{40}-33y^{39}+\cdots-36y+1)$
c_6	$((y-1)^{12})(y^{10}-6y^9+\cdots+19y+4)^4(y^{13}-9y^{12}+\cdots-11y-1)$ $\cdot(y^{28}-18y^{27}+\cdots+1943360y+506944)$
c_7	$((y^2+y+1)^{26})(y^{13}+2y^{12}+\cdots-2y-1)$ $\cdot(y^{28}+3y^{27}+\cdots+486539264y+67108864)$
c_9, c_{11}	$(y^{12}+8y^{11}+\cdots+848y+169)(y^{13}+2y^{12}+\cdots-2y-1)$ $\cdot(y^{28}+6y^{27}+\cdots+40y+1)(y^{40}+11y^{39}+\cdots+62528y+3721)$