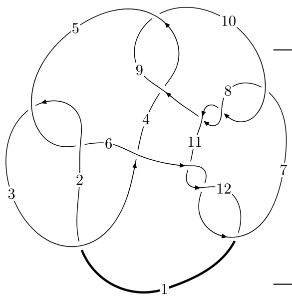
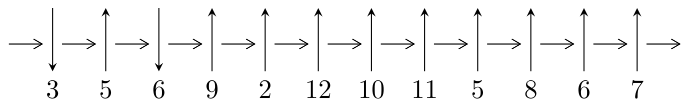
$12n_{0067}$ ($K12n_{0067}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 5.68457 \times 10^{17} u^{17} + 8.64985 \times 10^{17} u^{16} + \cdots + 1.24822 \times 10^{20} d + 1.55459 \times 10^{19}, \\
& 2.99690 \times 10^{17} u^{17} + 2.72458 \times 10^{17} u^{16} + \cdots + 2.49645 \times 10^{20} c - 2.46906 \times 10^{20}, \\
& - 4.18893 \times 10^{15} u^{17} + 2.24411 \times 10^{18} u^{16} + \cdots + 1.24822 \times 10^{20} b - 4.97576 \times 10^{19}, \\
& - 3.58259 \times 10^{17} u^{17} - 3.47344 \times 10^{18} u^{16} + \cdots + 2.49645 \times 10^{20} a - 2.35898 \times 10^{20}, \\
& u^{18} + 3u^{17} + \cdots + 32u + 32 \rangle \\
I_2^u = \langle & -1447u^9 c - 65u^9 + \cdots + 7346c + 3206,\ -22391u^9 c + 7563u^9 + \cdots + 121770c - 50482, \\
& - 378u^9 + 149u^8 + \cdots + 857b + 1781,\ 7265u^9 - 363u^8 + \cdots + 13712a - 20806, \\
& u^{10} - u^9 - 7u^8 + 8u^7 + 13u^6 - 14u^5 - 2u^4 - 2u^3 + 13u^2 - 12u + 4 \rangle
\end{aligned}$$

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

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 43 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.

$$\boldsymbol{I_1^u = \langle 5.68 \times 10^{17} u^{17} + 8.65 \times 10^{17} u^{16} + \cdots + 1.25 \times 10^{20} d + 1.55 \times 10^{19},\ 3.00 \times 10^{17} u^{17} + 2.72 \times 10^{17} u^{16} + \cdots + 2.50 \times 10^{20} c - 2.47 \times 10^{20},\ -4.19 \times 10^{15} u^{17} + 2.24 \times 10^{18} u^{16} + \cdots + 1.25 \times 10^{20} b - 4.98 \times 10^{19},\ -3.58 \times 10^{17} u^{17} - 3.47 \times 10^{18} u^{16} + \cdots + 2.50 \times 10^{20} a - 2.36 \times 10^{20},\ u^{18} + 3u^{17} + \cdots + 32u + 32 \rangle}$$

(i) Arc colorings

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

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

$$a_6 = \begin{pmatrix} 0.00143508u^{17} + 0.0139135u^{16} + \cdots - 0.714624u + 0.944936 \\ 0.0000335592u^{17} - 0.0179784u^{16} + \cdots + 1.37888u + 0.398628 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.00120047u^{17} - 0.00109138u^{16} + \cdots - 0.0893825u + 0.989028 \\ -0.00455413u^{17} - 0.00692973u^{16} + \cdots - 0.245124u - 0.124544 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.00490067u^{17} - 0.0153878u^{16} + \cdots + 0.466611u + 1.14967 \\ 0.00513528u^{17} + 0.0282099u^{16} + \cdots - 1.27062u - 0.215706 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.000371161u^{17} + 0.0231129u^{16} + \cdots + 0.350709u - 0.584653 \\ 0.0295819u^{17} + 0.0399851u^{16} + \cdots + 2.27781u + 1.67132 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.000371161u^{17} + 0.0231129u^{16} + \cdots + 0.350709u - 0.584653 \\ 0.0113208u^{17} + 0.00191842u^{16} + \cdots + 1.56195u + 0.967341 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.00146864u^{17} + 0.00406488u^{16} + \cdots - 0.664258u - 1.34356 \\ 0.0141649u^{17} + 0.00737088u^{16} + \cdots + 1.60295u + 0.669693 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.00120047u^{17} - 0.00109138u^{16} + \cdots - 0.0893825u + 0.989028 \\ 0.00756978u^{17} + 0.0124143u^{16} + \cdots + 0.287029u + 0.204865 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.00575459u^{17} - 0.00802111u^{16} + \cdots - 0.334506u + 0.864484 \\ 0.0164592u^{17} + 0.0311513u^{16} + \cdots + 0.356742u + 0.420310 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{1881106086253954753}{31205580083057755580}u^{17} + \frac{5887773742508132609}{62411160166115511160}u^{16} + \cdots + \frac{57261478582730965292}{7801395020764438895}u + \frac{64355080374530213256}{7801395020764438895}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{18} + 5u^{17} + \cdots - 136u + 16$
c_2, c_5	$u^{18} + u^{17} + \cdots - 12u + 4$
c_3	$u^{18} - u^{17} + \cdots - 756u + 1252$
c_4, c_9	$u^{18} + 3u^{17} + \cdots + 32u + 32$
c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$u^{18} + 5u^{17} + \cdots - 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{18} + 17y^{17} + \cdots - 38944y + 256$
c_2, c_5	$y^{18} + 5y^{17} + \cdots - 136y + 16$
c_3	$y^{18} + 29y^{17} + \cdots - 3653960y + 1567504$
c_4, c_9	$y^{18} - 15y^{17} + \cdots - 2048y + 1024$
c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$y^{18} - 29y^{17} + \cdots - 26y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.078440 + 0.216619I$ $a = 0.253388 - 1.028300I$ $b = -0.71841 + 2.42684I$ $c = 0.492205 - 0.156710I$ $d = -0.844681 - 0.587317I$	$3.61986 + 3.92600I$	$13.3379 - 5.7849I$
$u = -1.078440 - 0.216619I$ $a = 0.253388 + 1.028300I$ $b = -0.71841 - 2.42684I$ $c = 0.492205 + 0.156710I$ $d = -0.844681 + 0.587317I$	$3.61986 - 3.92600I$	$13.3379 + 5.7849I$
$u = 0.709201 + 0.274453I$ $a = -0.01264 + 1.59035I$ $b = 0.27741 - 3.38402I$ $c = 0.515734 + 0.082365I$ $d = -0.890761 + 0.301961I$	$3.12578 + 1.29944I$	$14.10514 - 0.79844I$
$u = 0.709201 - 0.274453I$ $a = -0.01264 - 1.59035I$ $b = 0.27741 + 3.38402I$ $c = 0.515734 - 0.082365I$ $d = -0.890761 - 0.301961I$	$3.12578 - 1.29944I$	$14.10514 + 0.79844I$
$u = -0.610909 + 0.417338I$ $a = 0.428235 + 0.847865I$ $b = -0.502581 - 0.271599I$ $c = 0.768504 + 0.302779I$ $d = -0.126387 + 0.443779I$	$-1.20916 - 1.63680I$	$1.95124 + 5.83411I$
$u = -0.610909 - 0.417338I$ $a = 0.428235 - 0.847865I$ $b = -0.502581 + 0.271599I$ $c = 0.768504 - 0.302779I$ $d = -0.126387 - 0.443779I$	$-1.20916 + 1.63680I$	$1.95124 - 5.83411I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.555399$ $a = 0.144993$ $b = 0.407093$ $c = 0.739573$ $d = -0.352132$	0.726383	14.1310
$u = -0.072203 + 0.503217I$ $a = 2.01283 + 0.53928I$ $b = 0.179243 + 0.151857I$ $c = 1.330050 + 0.161709I$ $d = 0.259101 + 0.090079I$	$0.39079 + 2.25423I$	$1.75748 - 3.62098I$
$u = -0.072203 - 0.503217I$ $a = 2.01283 - 0.53928I$ $b = 0.179243 - 0.151857I$ $c = 1.330050 - 0.161709I$ $d = 0.259101 - 0.090079I$	$0.39079 - 2.25423I$	$1.75748 + 3.62098I$
$u = -1.83506 + 0.34828I$ $a = 0.808325 + 0.623484I$ $b = -0.014393 - 0.834480I$ $c = -1.318640 - 0.296832I$ $d = 1.72178 - 0.16248I$	$11.72250 - 5.21750I$	$12.21552 + 2.94469I$
$u = -1.83506 - 0.34828I$ $a = 0.808325 - 0.623484I$ $b = -0.014393 + 0.834480I$ $c = -1.318640 + 0.296832I$ $d = 1.72178 + 0.16248I$	$11.72250 + 5.21750I$	$12.21552 - 2.94469I$
$u = -1.70473 + 1.04671I$ $a = -0.230730 + 0.966273I$ $b = -0.03020 - 2.29892I$ $c = -0.961354 - 0.702659I$ $d = 1.67800 - 0.49555I$	$-19.5607 - 13.8899I$	$13.2954 + 6.2001I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.70473-1.04671I$ $a=-0.230730-0.966273I$ $b=-0.03020+2.29892I$ $c=-0.961354+0.702659I$ $d=\ \ 1.67800+0.49555I$	$-19.5607+13.8899I$	$13.2954-6.2001I$
$u=-0.16477+2.05598I$ $a=\ \ 0.905061-0.066880I$ $b=\ \ 0.464341+0.377003I$ $c=\ \ 0.354039-0.009486I$ $d=-1.82253-0.07562I$	$15.4858+3.5329I$	$13.90580-2.19457I$
$u=-0.16477-2.05598I$ $a=\ \ 0.905061+0.066880I$ $b=\ \ 0.464341-0.377003I$ $c=\ \ 0.354039+0.009486I$ $d=-1.82253+0.07562I$	$15.4858-3.5329I$	$13.90580+2.19457I$
$u=\ \ 2.12691$ $a=\ \ 0.609160$ $b=\ \ 0.619389$ $c=-1.17023$ $d=\ \ 1.85453$	16.6053	15.4680
$u=\ \ 1.91575+0.96837I$ $a=-0.041545-0.774296I$ $b=\ \ 0.33135+2.10179I$ $c=-0.965214+0.561225I$ $d=\ \ 1.77427+0.45020I$	$-18.1284+6.9769I$	$14.6320-1.8700I$
$u=\ \ 1.91575-0.96837I$ $a=-0.041545+0.774296I$ $b=\ \ 0.33135-2.10179I$ $c=-0.965214-0.561225I$ $d=\ \ 1.77427-0.45020I$	$-18.1284-6.9769I$	$14.6320+1.8700I$

II. $\boldsymbol{I^u_2 = \langle -1447cu^9 - 65u^9 + \cdots + 7346c + 3206,\ -2.24\times 10^4 cu^9 + 7563u^9 + \cdots + 1.22\times 10^5 c - 5.05\times 10^4,\ -378u^9 + 149u^8 + \cdots + 857b + 1781,\ 7265u^9 - 363u^8 + \cdots + 1.37\times 10^4 a - 2.08\times 10^4,\ u^{10} - u^9 + \cdots - 12u + 4\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.529828u^9 + 0.0264732u^8 + \cdots - 4.18035u + 1.51736 \\ 0.441074u^9 - 0.173862u^8 + \cdots + 4.90898u - 2.07818 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} c \\ 0.422112cu^9 + 0.0189615u^9 + \cdots - 2.14294c - 0.935239 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.0189615cu^9 - 0.529828u^9 + \cdots + 0.935239c + 1.51736 \\ 0.199533cu^9 + 0.460035u^9 + \cdots - 0.487748c - 3.01342 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.893451u^9 - 0.113258u^8 + \cdots + 6.74818u - 3.90621 \\ -0.258897u^9 + 0.0170653u^8 + \cdots - 1.24023u + 1.07730 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.893451u^9 - 0.113258u^8 + \cdots + 6.74818u - 3.90621 \\ 0.381418u^9 - 0.120916u^8 + \cdots + 4.54828u - 2.04347 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0887544u^9 + 0.147389u^8 + \cdots - 0.728632u + 0.560823 \\ 0.145566u^9 - 0.271004u^8 + \cdots + 2.43028u - 1.13361 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} c \\ -0.422112cu^9 - 0.0189615u^9 + \cdots + 2.14294c + 0.935239 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.422112cu^9 + 0.0189615u^9 + \cdots - 1.14294c - 0.935239 \\ -0.387106cu^9 - 0.218495u^9 + \cdots + 2.72404c + 1.42299 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{3875}{1714}u^9 - \frac{183}{1714}u^8 - \frac{26957}{1714}u^7 + \frac{2248}{857}u^6 + \frac{51811}{1714}u^5 + \frac{541}{857}u^4 - \frac{185}{857}u^3 - \frac{9943}{857}u^2 + \frac{27495}{1714}u + \frac{882}{857}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{10}+2u^9+9u^8+14u^7+28u^6+31u^5+35u^4+20u^3+15u^2+5u+1)^2$
c_2, c_5	$(u^{10}+2u^9+3u^8+2u^7+4u^6+3u^5+3u^4+3u^2+u+1)^2$
c_3	$(u^{10}-2u^9+\cdots+21u+17)^2$
c_4, c_9	$(u^{10}-u^9-7u^8+8u^7+13u^6-14u^5-2u^4-2u^3+13u^2-12u+4)^2$
c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$u^{20}+3u^{19}+\cdots-8u+16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{10} + 14y^9 + \cdots + 5y + 1)^2$
c_2, c_5	$(y^{10} + 2y^9 + 9y^8 + 14y^7 + 28y^6 + 31y^5 + 35y^4 + 20y^3 + 15y^2 + 5y + 1)^2$
c_3	$(y^{10} + 26y^9 + \cdots + 2925y + 289)^2$
c_4, c_9	$(y^{10} - 15y^9 + \cdots - 40y + 16)^2$
c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$y^{20} - 19y^{19} + \cdots + 1248y + 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.620250 + 0.748934I$ $a = -0.676664 + 0.412835I$ $b = -0.425803 + 0.101141I$ $c = 0.448932 - 0.060647I$ $d = -1.187590 - 0.295523I$	$4.43566 - 1.46073I$	$14.6593 + 3.2864I$
$u = -0.620250 + 0.748934I$ $a = -0.676664 + 0.412835I$ $b = -0.425803 + 0.101141I$ $c = -0.77388 - 2.52919I$ $d = 1.110620 - 0.361536I$	$4.43566 - 1.46073I$	$14.6593 + 3.2864I$
$u = -0.620250 - 0.748934I$ $a = -0.676664 - 0.412835I$ $b = -0.425803 - 0.101141I$ $c = 0.448932 + 0.060647I$ $d = -1.187590 + 0.295523I$	$4.43566 + 1.46073I$	$14.6593 - 3.2864I$
$u = -0.620250 - 0.748934I$ $a = -0.676664 - 0.412835I$ $b = -0.425803 - 0.101141I$ $c = -0.77388 + 2.52919I$ $d = 1.110620 + 0.361536I$	$4.43566 + 1.46073I$	$14.6593 - 3.2864I$
$u = 0.793271 + 0.121626I$ $a = -1.18565 - 0.94130I$ $b = 0.064264 + 0.396481I$ $c = 0.549929 + 0.112131I$ $d = -0.745831 + 0.355977I$	$2.87696 - 2.81207I$	$12.88002 + 4.64391I$
$u = 0.793271 + 0.121626I$ $a = -1.18565 - 0.94130I$ $b = 0.064264 + 0.396481I$ $c = -4.13892 + 0.99173I$ $d = 1.228490 + 0.054749I$	$2.87696 - 2.81207I$	$12.88002 + 4.64391I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.793271 - 0.121626I$ $a = -1.18565 + 0.94130I$ $b = 0.064264 - 0.396481I$ $c = 0.549929 - 0.112131I$ $d = -0.745831 - 0.355977I$	$2.87696 + 2.81207I$	$12.88002 - 4.64391I$
$u = 0.793271 - 0.121626I$ $a = -1.18565 + 0.94130I$ $b = 0.064264 - 0.396481I$ $c = -4.13892 - 0.99173I$ $d = 1.228490 - 0.054749I$	$2.87696 + 2.81207I$	$12.88002 - 4.64391I$
$u = 0.413972 + 0.524496I$ $a = -0.490625 + 0.051502I$ $b = 0.987479 + 0.430021I$ $c = 0.920372 - 0.380673I$ $d = 0.072202 - 0.383745I$	$1.39065 - 0.79591I$	$7.22040 - 0.81155I$
$u = 0.413972 + 0.524496I$ $a = -0.490625 + 0.051502I$ $b = 0.987479 + 0.430021I$ $c = 0.475648 + 0.039205I$ $d = -1.088210 + 0.172121I$	$1.39065 - 0.79591I$	$7.22040 - 0.81155I$
$u = 0.413972 - 0.524496I$ $a = -0.490625 - 0.051502I$ $b = 0.987479 - 0.430021I$ $c = 0.920372 + 0.380673I$ $d = 0.072202 + 0.383745I$	$1.39065 + 0.79591I$	$7.22040 + 0.81155I$
$u = 0.413972 - 0.524496I$ $a = -0.490625 - 0.051502I$ $b = 0.987479 - 0.430021I$ $c = 0.475648 - 0.039205I$ $d = -1.088210 - 0.172121I$	$1.39065 + 0.79591I$	$7.22040 + 0.81155I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.88200 + 0.46774I$ $a = 0.111563 + 0.952024I$ $b = 0.18395 - 2.32396I$ $c = -1.236340 + 0.360963I$ $d = 1.74531 + 0.21760I$	$12.6890 + 7.4068I$	$12.74326 - 4.41038I$
$u = 1.88200 + 0.46774I$ $a = 0.111563 + 0.952024I$ $b = 0.18395 - 2.32396I$ $c = 0.385819 - 0.297883I$ $d = -0.623883 - 1.253760I$	$12.6890 + 7.4068I$	$12.74326 - 4.41038I$
$u = 1.88200 - 0.46774I$ $a = 0.111563 - 0.952024I$ $b = 0.18395 + 2.32396I$ $c = -1.236340 - 0.360963I$ $d = 1.74531 - 0.21760I$	$12.6890 - 7.4068I$	$12.74326 + 4.41038I$
$u = 1.88200 - 0.46774I$ $a = 0.111563 - 0.952024I$ $b = 0.18395 + 2.32396I$ $c = 0.385819 + 0.297883I$ $d = -0.623883 + 1.253760I$	$12.6890 - 7.4068I$	$12.74326 + 4.41038I$
$u = -1.96899 + 0.18613I$ $a = -0.008629 - 0.881122I$ $b = -0.30989 + 2.24439I$ $c = -1.262570 - 0.138704I$ $d = 1.78259 - 0.08597I$	$13.15130 - 0.50253I$	$13.49701 - 0.08773I$
$u = -1.96899 + 0.18613I$ $a = -0.008629 - 0.881122I$ $b = -0.30989 + 2.24439I$ $c = 0.381016 + 0.259317I$ $d = -0.79370 + 1.22078I$	$13.15130 - 0.50253I$	$13.49701 - 0.08773I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.96899-0.18613I$ $a=-0.008629+0.881122I$ $b=-0.30989-2.24439I$ $c=-1.262570+0.138704I$ $d=\ \ 1.78259+0.08597I$	$13.15130+0.50253I$	$13.49701+0.08773I$
$u=-1.96899-0.18613I$ $a=-0.008629+0.881122I$ $b=-0.30989-2.24439I$ $c=\ \ 0.381016-0.259317I$ $d=-0.79370-1.22078I$	$13.15130+0.50253I$	$13.49701+0.08773I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v + 7$

(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	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v=$	$0.500000+0.866025I$		
$a=$	0		
$b=$	1.00000	$1.64493-2.02988I$	$9.00000+3.46410I$
$c=$	1.00000		
$d=$	0		
$v=$	$0.500000-0.866025I$		
$a=$	0		
$b=$	1.00000	$1.64493+2.02988I$	$9.00000-3.46410I$
$c=$	1.00000		
$d=$	0		

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v+7$

(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_9 c_{11}, c_{12}	u^2
c_7, c_8	$(u+1)^2$
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_9 c_{11}, c_{12}	y^2
c_7, c_8, c_{10}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = 0.500000 + 0.866025I$ $a = 0$ $b = 1.00000$ $c = 0$ $d = -1.00000$	$1.64493 - 2.02988I$	$9.00000 + 3.46410I$
$v = 0.500000 - 0.866025I$ $a = 0$ $b = 1.00000$ $c = 0$ $d = -1.00000$	$1.64493 + 2.02988I$	$9.00000 - 3.46410I$

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

(i) Arc colorings

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

(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_9	u
c_6, c_{10}	$u - 1$
c_7, c_8, c_{11} c_{12}	$u + 1$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= b^3v + 4bv - v^2 + 12$

(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	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v=\cdots$		
$a=\cdots$		
$b=\cdots$	$3.28987-2.02988I$	$16.0361+3.3760I$
$c=\cdots$		
$d=\cdots$		

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u^2-u+1)^2$ $\cdot(u^{10}+2u^9+9u^8+14u^7+28u^6+31u^5+35u^4+20u^3+15u^2+5u+1)^2$ $\cdot(u^{18}+5u^{17}+\cdots-136u+16)$
c_2	$u(u^2+u+1)^2$ $\cdot(u^{10}+2u^9+3u^8+2u^7+4u^6+3u^5+3u^4+3u^2+u+1)^2$ $\cdot(u^{18}+u^{17}+\cdots-12u+4)$
c_3	$u(u^2-u+1)^2(u^{10}-2u^9+\cdots+21u+17)^2$ $\cdot(u^{18}-u^{17}+\cdots-756u+1252)$
c_4, c_9	$u^5(u^{10}-u^9+\cdots-12u+4)^2$ $\cdot(u^{18}+3u^{17}+\cdots+32u+32)$
c_5	$u(u^2-u+1)^2$ $\cdot(u^{10}+2u^9+3u^8+2u^7+4u^6+3u^5+3u^4+3u^2+u+1)^2$ $\cdot(u^{18}+u^{17}+\cdots-12u+4)$
c_6	$u^2(u-1)(u+1)^2(u^{18}+5u^{17}+\cdots-2u-1)(u^{20}+3u^{19}+\cdots-8u+16)$
c_7, c_8	$u^2(u+1)^3(u^{18}+5u^{17}+\cdots-2u-1)(u^{20}+3u^{19}+\cdots-8u+16)$
c_{10}	$u^2(u-1)^3(u^{18}+5u^{17}+\cdots-2u-1)(u^{20}+3u^{19}+\cdots-8u+16)$
c_{11}, c_{12}	$u^2(u-1)^2(u+1)(u^{18}+5u^{17}+\cdots-2u-1)(u^{20}+3u^{19}+\cdots-8u+16)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y^2+y+1)^2(y^{10}+14y^9+\cdots+5y+1)^2$ $\cdot\,(y^{18}+17y^{17}+\cdots-38944y+256)$
c_2, c_5	$y(y^2+y+1)^2$ $\cdot\,(y^{10}+2y^9+9y^8+14y^7+28y^6+31y^5+35y^4+20y^3+15y^2+5y+1)^2$ $\cdot\,(y^{18}+5y^{17}+\cdots-136y+16)$
c_3	$y(y^2+y+1)^2(y^{10}+26y^9+\cdots+2925y+289)^2$ $\cdot\,(y^{18}+29y^{17}+\cdots-3653960y+1567504)$
c_4, c_9	$y^5(y^{10}-15y^9+\cdots-40y+16)^2(y^{18}-15y^{17}+\cdots-2048y+1024)$
c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$y^2(y-1)^3(y^{18}-29y^{17}+\cdots-26y+1)$ $\cdot\,(y^{20}-19y^{19}+\cdots+1248y+256)$