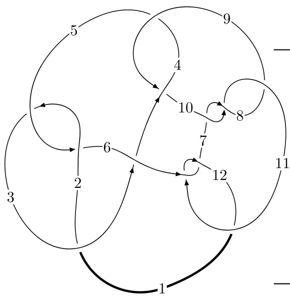
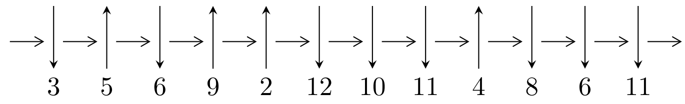
$12n_{0064}$ $(K12n_{0064})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 5.37718 \times 10^{22} u^{20} - 1.64184 \times 10^{23} u^{19} + \cdots + 1.18107 \times 10^{25} d + 1.07557 \times 10^{24}, \\
& - 6.27749 \times 10^{23} u^{20} + 1.76680 \times 10^{24} u^{19} + \cdots + 2.36214 \times 10^{25} c - 1.96176 \times 10^{25}, \\
& 4.23740 \times 10^{23} u^{20} - 1.22487 \times 10^{24} u^{19} + \cdots + 1.18107 \times 10^{25} b + 1.27339 \times 10^{25}, \\
& 1.40999 \times 10^{24} u^{20} - 3.56156 \times 10^{24} u^{19} + \cdots + 1.18107 \times 10^{25} a + 8.01422 \times 10^{25},\ u^{21} - 3u^{20} + \cdots - 32u +
\end{aligned}$$

$$\begin{aligned}
I_2^u = \langle & 182575 u^{12} c - 236482 u^{12} + \cdots - 1091678 c - 1127628, \\
& 152367 u^{12} c - 563814 u^{12} + \cdots - 1320834 c + 1767620, \\
& - 72875 u^{12} + 44515 u^{11} + \cdots + 2792824 b - 1858402, \\
& - 112621 u^{12} - 236501 u^{11} + \cdots + 1396412 a - 268784, \\
& u^{13} + u^{12} + 8u^{11} + 7u^{10} + 22u^9 + 18u^8 + 20u^7 + 21u^6 - u^5 + 5u^4 + 8u^3 - 9u^2 + 4u - 4 \rangle
\end{aligned}$$

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

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 52 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

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[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. $I_1^u = \langle 5.38\times10^{22}u^{20} - 1.64\times10^{23}u^{19} + \cdots + 1.18\times10^{25}d + 1.08\times10^{24},\ -6.28\times10^{23}u^{20} + 1.77\times10^{24}u^{19} + \cdots + 2.36\times10^{25}c - 1.96\times10^{25},\ 4.24\times10^{23}u^{20} - 1.22\times10^{24}u^{19} + \cdots + 1.18\times10^{25}b + 1.27\times10^{25},\ 1.41\times10^{24}u^{20} - 3.56\times10^{24}u^{19} + \cdots + 1.18\times10^{25}a + 8.01\times10^{25},\ u^{21} - 3u^{20} + \cdots - 32u + 32\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-0.119382u^{20} + 0.301554u^{19} + \cdots + 2.04903u - 6.78557\\-0.0358777u^{20} + 0.103709u^{19} + \cdots - 0.171384u - 1.07817\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0.0265755u^{20} - 0.0747968u^{19} + \cdots + 1.58156u + 0.830504\\-0.00455281u^{20} + 0.0139013u^{19} + \cdots + 0.741851u - 0.0910676\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0.110080u^{20} - 0.272643u^{19} + \cdots - 1.63885u + 6.53790\\0.0218260u^{20} - 0.0597864u^{19} + \cdots + 1.24989u + 0.673905\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-0.135687u^{20} + 0.428519u^{19} + \cdots - 9.42931u + 0.294719\\-0.0249995u^{20} + 0.0790420u^{19} + \cdots - 2.07117u + 0.534476\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-0.155819u^{20} + 0.505452u^{19} + \cdots - 12.3868u + 0.446924\\-0.0342125u^{20} + 0.109848u^{19} + \cdots - 3.24459u + 1.06368\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-0.0835048u^{20} + 0.197846u^{19} + \cdots + 2.22041u - 5.70740\\-0.0132576u^{20} + 0.0335645u^{19} + \cdots - 0.815372u - 0.607226\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-0.0311283u^{20} + 0.0886981u^{19} + \cdots - 0.839713u - 0.921571\\-0.00455281u^{20} + 0.0139013u^{19} + \cdots + 0.741851u - 0.0910676\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-0.0442495u^{20} + 0.128821u^{19} + \cdots - 1.53238u - 1.07932\\-0.0176741u^{20} + 0.0540245u^{19} + \cdots + 0.0491821u - 0.248813\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{2039716473444181917065557}{1476335887006576019057698}u^{20} + \frac{2056765698754565732069615}{5905343548026304076230792}u^{19} + \cdots + \frac{1104129438107009041908748 4}{738167943503288009528849}u - \frac{993704291228490774039511 6}{738167943503288009528849}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{21} + 11u^{20} + \cdots + 40u - 16$
c_2, c_5	$u^{21} + u^{20} + \cdots - 12u - 4$
c_3	$u^{21} - u^{20} + \cdots - 636u - 612$
c_4, c_9	$u^{21} + 3u^{20} + \cdots - 32u - 32$
c_6, c_7, c_8 c_{10}, c_{11}	$u^{21} - 5u^{20} + \cdots - 2u + 1$
c_{12}	$u^{21} + 31u^{20} + \cdots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{21} - y^{20} + \cdots + 3616y - 256$
c_2, c_5	$y^{21} + 11y^{20} + \cdots + 40y - 16$
c_3	$y^{21} - 13y^{20} + \cdots + 1093608y - 374544$
c_4, c_9	$y^{21} + 15y^{20} + \cdots - 4096y - 1024$
c_6, c_7, c_8 c_{10}, c_{11}	$y^{21} - 31y^{20} + \cdots - 4y - 1$
c_{12}	$y^{21} - 71y^{20} + \cdots - 144y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.036987 + 1.146540I$ $a = -1.67484 + 0.76411I$ $b = -1.039700 + 0.250963I$ $c = 0.578318 + 0.602865I$ $d = -0.222232 + 0.595413I$	$-3.32924 + 4.98790I$	$-8.89610 - 7.00933I$
$u = 0.036987 - 1.146540I$ $a = -1.67484 - 0.76411I$ $b = -1.039700 - 0.250963I$ $c = 0.578318 - 0.602865I$ $d = -0.222232 - 0.595413I$	$-3.32924 - 4.98790I$	$-8.89610 + 7.00933I$
$u = -0.154679 + 0.793727I$ $a = 1.361070 + 0.002102I$ $b = 0.594261 + 0.212903I$ $c = -0.412466 + 0.647829I$ $d = 0.050314 + 0.532414I$	$-0.57334 - 1.34767I$	$-3.83291 + 5.35474I$
$u = -0.154679 - 0.793727I$ $a = 1.361070 - 0.002102I$ $b = 0.594261 - 0.212903I$ $c = -0.412466 - 0.647829I$ $d = 0.050314 - 0.532414I$	$-0.57334 + 1.34767I$	$-3.83291 - 5.35474I$
$u = -0.470495 + 0.448103I$ $a = 0.393211 + 0.432952I$ $b = 0.089016 + 0.741526I$ $c = -0.409901 + 0.397885I$ $d = -0.268303 + 0.555704I$	$0.53740 - 1.37698I$	$1.82779 + 4.46485I$
$u = -0.470495 - 0.448103I$ $a = 0.393211 - 0.432952I$ $b = 0.089016 - 0.741526I$ $c = -0.409901 - 0.397885I$ $d = -0.268303 - 0.555704I$	$0.53740 + 1.37698I$	$1.82779 - 4.46485I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.128491+0.614288I$ $a=-4.90846-2.20239I$ $b=-0.714269-0.685882I$ $c=\ \ 0.535926+1.193030I$ $d=-0.103617+0.330827I$	$-2.84340-1.62330I$	$-11.63179+1.59969I$
$u=-0.128491-0.614288I$ $a=-4.90846+2.20239I$ $b=-0.714269+0.685882I$ $c=\ \ 0.535926-1.193030I$ $d=-0.103617-0.330827I$	$-2.84340+1.62330I$	$-11.63179-1.59969I$
$u=\ \ 0.518224+0.162575I$ $a=\ \ 0.202826+0.452275I$ $b=\ \ 0.680830+0.757240I$ $c=\ \ 0.507737+0.210413I$ $d=\ \ 0.583653+0.355856I$	$-0.25092-2.48183I$	$1.69657+3.99164I$
$u=\ \ 0.518224-0.162575I$ $a=\ \ 0.202826-0.452275I$ $b=\ \ 0.680830-0.757240I$ $c=\ \ 0.507737-0.210413I$ $d=\ \ 0.583653-0.355856I$	$-0.25092+2.48183I$	$1.69657-3.99164I$
$u=-1.63718$ $a=\ \ 0.346145$ $b=-1.85424$ $c=\ \ 0.993823$ $d=-0.623198$	-10.0156	-8.03320
$u=-0.11848+1.68160I$ $a=\ \ 0.200381+0.247887I$ $b=\ \ 0.39834+2.34923I$ $c=-0.035721-0.977610I$ $d=-0.04009-2.59088I$	$-10.91870-3.26339I$	$-9.90010+2.49959I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.11848-1.68160I$ $a=0.200381-0.247887I$ $b=0.39834-2.34923I$ $c=-0.035721+0.977610I$ $d=-0.04009+2.59088I$	$-10.91870+3.26339I$	$-9.90010-2.49959I$
$u=1.80226+0.29000I$ $a=0.004080+0.391285I$ $b=1.85242+0.01325I$ $c=-0.934416+0.075142I$ $d=0.669749+0.073622I$	$-14.0445-5.1370I$	$-11.02836+2.94498I$
$u=1.80226-0.29000I$ $a=0.004080-0.391285I$ $b=1.85242-0.01325I$ $c=-0.934416-0.075142I$ $d=0.669749-0.073622I$	$-14.0445+5.1370I$	$-11.02836-2.94498I$
$u=-0.77417+1.65700I$ $a=0.954850-0.309679I$ $b=1.86573+1.18814I$ $c=-0.199071-0.900171I$ $d=-0.19629-2.45464I$	$-15.0920-8.4883I$	$-8.50111+3.29621I$
$u=-0.77417-1.65700I$ $a=0.954850+0.309679I$ $b=1.86573-1.18814I$ $c=-0.199071+0.900171I$ $d=-0.19629+2.45464I$	$-15.0920+8.4883I$	$-8.50111-3.29621I$
$u=0.94230+1.60086I$ $a=-1.068660-0.473361I$ $b=-2.07474+0.83917I$ $c=0.234926-0.876218I$ $d=0.22253-2.40487I$	$-18.0417+14.4957I$	$-10.41632-6.77876I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.94230 - 1.60086I$ $a = -1.068660 + 0.473361I$ $b = -2.07474 - 0.83917I$ $c = 0.234926 + 0.876218I$ $d = 0.22253 + 2.40487I$	$-18.0417 - 14.4957I$	$-10.41632 + 6.77876I$
$u = 0.66513 + 1.94791I$ $a = -0.637538 - 0.381670I$ $b = -1.22477 + 1.08336I$ $c = 0.137757 - 0.866713I$ $d = 0.11588 - 2.45183I$	$18.5711 + 4.0668I$	$-12.30105 - 1.16982I$
$u = 0.66513 - 1.94791I$ $a = -0.637538 + 0.381670I$ $b = -1.22477 - 1.08336I$ $c = 0.137757 + 0.866713I$ $d = 0.11588 + 2.45183I$	$18.5711 - 4.0668I$	$-12.30105 + 1.16982I$

II. $\boldsymbol{I_2^u = \langle 1.83 \times 10^5 cu^{12} - 2.36 \times 10^5 u^{12} + \cdots - 1.09 \times 10^6 c - 1.13 \times 10^6,\ 1.52 \times 10^5 cu^{12} - 5.64 \times 10^5 u^{12} + \cdots - 1.32 \times 10^6 c + 1.77 \times 10^6,\ -7.29 \times 10^4 u^{12} + 4.45 \times 10^4 u^{11} + \cdots + 2.79 \times 10^6 b - 1.86 \times 10^6,\ -1.13 \times 10^5 u^{12} - 2.37 \times 10^5 u^{11} + \cdots + 1.40 \times 10^6 a - 2.69 \times 10^5,\ u^{13} + u^{12} + \cdots + 4u - 4 \rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.0806503u^{12} + 0.169363u^{11} + \cdots - 0.809567u + 0.192482 \\ 0.0260937u^{12} - 0.0159391u^{11} + \cdots - 1.52812u + 0.665420 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} c \\ -0.130746cu^{12} + 0.169350u^{12} + \cdots + 0.781774c + 0.807518 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0887131cu^{12} - 0.0545566u^{12} + \cdots + 0.677399c + 0.472939 \\ -0.0887131cu^{12} + 0.195443u^{12} + \cdots + 0.677399c + 1.47294 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.0356093u^{12} - 0.00301684u^{11} + \cdots + 0.564974u + 1.08093 \\ -0.201964u^{12} - 0.195466u^{11} + \cdots + 1.82111u - 0.0563709 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.105649u^{12} + 0.155843u^{11} + \cdots - 0.983332u + 1.00693 \\ -0.158242u^{12} - 0.179223u^{11} + \cdots + 1.32649u - 0.126777 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.0545566u^{12} + 0.185302u^{11} + \cdots + 0.718555u - 0.472939 \\ -0.0847798u^{12} - 0.0614206u^{11} + \cdots + 1.83288u - 1.18840 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.130746cu^{12} + 0.169350u^{12} + \cdots - 0.218226c + 0.807518 \\ -0.130746cu^{12} + 0.169350u^{12} + \cdots + 0.781774c + 0.807518 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.130746cu^{12} + 0.169350u^{12} + \cdots - 0.218226c + 0.807518 \\ -0.130746cu^{12} + 0.169350u^{12} + \cdots + 0.781774c + 0.807518 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{498055}{698206}u^{12} + \frac{527627}{698206}u^{11} + \cdots - \frac{3711195}{698206}u - \frac{2197714}{349103}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{13}+8u^{12}+\cdots+5u-1)^2$
c_2, c_5	$(u^{13}+2u^{12}+\cdots+u-1)^2$
c_3	$(u^{13}-2u^{12}+\cdots+3u-1)^2$
c_4, c_9	$(u^{13}-u^{12}+\cdots+4u+4)^2$
c_6, c_7, c_8 c_{10}, c_{11}	$u^{26}-3u^{25}+\cdots-24u-16$
c_{12}	$u^{26}+23u^{25}+\cdots+1824u+256$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{13} - 4y^{12} + \cdots + 85y - 1)^2$
c_2, c_5	$(y^{13} + 8y^{12} + \cdots + 5y - 1)^2$
c_3	$(y^{13} - 16y^{12} + \cdots + 5y - 1)^2$
c_4, c_9	$(y^{13} + 15y^{12} + \cdots - 56y - 16)^2$
c_6, c_7, c_8 c_{10}, c_{11}	$y^{26} - 23y^{25} + \cdots - 1824y + 256$
c_{12}	$y^{26} - 43y^{25} + \cdots - 2728448y + 65536$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.997974 + 0.288600I$ $a = 0.076708 + 0.591760I$ $b = 0.651902 + 0.098264I$ $c = -0.683330 - 0.720692I$ $d = -0.91523 - 1.71878I$	$-4.89799 - 2.52293I$	$-10.35428 + 4.38707I$
$u = -0.997974 + 0.288600I$ $a = 0.076708 + 0.591760I$ $b = 0.651902 + 0.098264I$ $c = 1.258530 + 0.227197I$ $d = -0.435677 + 0.098702I$	$-4.89799 - 2.52293I$	$-10.35428 + 4.38707I$
$u = -0.997974 - 0.288600I$ $a = 0.076708 - 0.591760I$ $b = 0.651902 - 0.098264I$ $c = -0.683330 + 0.720692I$ $d = -0.91523 + 1.71878I$	$-4.89799 + 2.52293I$	$-10.35428 - 4.38707I$
$u = -0.997974 - 0.288600I$ $a = 0.076708 - 0.591760I$ $b = 0.651902 - 0.098264I$ $c = 1.258530 - 0.227197I$ $d = -0.435677 - 0.098702I$	$-4.89799 + 2.52293I$	$-10.35428 - 4.38707I$
$u = 0.452299 + 0.637242I$ $a = 0.45190 - 1.65380I$ $b = -0.181675 - 0.314949I$ $c = -1.050080 + 0.855900I$ $d = 0.262779 + 0.278726I$	$-2.32452 - 0.99909I$	$-8.45638 - 0.58191I$
$u = 0.452299 + 0.637242I$ $a = 0.45190 - 1.65380I$ $b = -0.181675 - 0.314949I$ $c = 0.416509 + 0.482947I$ $d = 0.133116 + 0.626828I$	$-2.32452 - 0.99909I$	$-8.45638 - 0.58191I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.452299 - 0.637242I$ $a = 0.45190 + 1.65380I$ $b = -0.181675 + 0.314949I$ $c = -1.050080 - 0.855900I$ $d = 0.262779 - 0.278726I$	$-2.32452 + 0.99909I$	$-8.45638 + 0.58191I$
$u = 0.452299 - 0.637242I$ $a = 0.45190 + 1.65380I$ $b = -0.181675 + 0.314949I$ $c = 0.416509 - 0.482947I$ $d = 0.133116 - 0.626828I$	$-2.32452 + 0.99909I$	$-8.45638 + 0.58191I$
$u = -0.032142 + 0.650070I$ $a = 0.248194 - 0.369192I$ $b = 0.469692 - 1.165710I$ $c = 0.289254 + 0.995266I$ $d = -0.055887 + 0.387220I$	$-2.68970 + 2.36301I$	$-10.56487 - 4.19898I$
$u = -0.032142 + 0.650070I$ $a = 0.248194 - 0.369192I$ $b = 0.469692 - 1.165710I$ $c = -0.06776 - 1.79178I$ $d = -0.12255 - 3.88363I$	$-2.68970 + 2.36301I$	$-10.56487 - 4.19898I$
$u = -0.032142 - 0.650070I$ $a = 0.248194 + 0.369192I$ $b = 0.469692 + 1.165710I$ $c = 0.289254 - 0.995266I$ $d = -0.055887 - 0.387220I$	$-2.68970 - 2.36301I$	$-10.56487 + 4.19898I$
$u = -0.032142 - 0.650070I$ $a = 0.248194 + 0.369192I$ $b = 0.469692 + 1.165710I$ $c = -0.06776 + 1.79178I$ $d = -0.12255 + 3.88363I$	$-2.68970 - 2.36301I$	$-10.56487 + 4.19898I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.612460$ $a = 0.691952$ $b = -0.370964$ $c = 0.817082$ $d = 1.22597$	-2.28684	-1.88180
$u = 0.612460$ $a = 0.691952$ $b = -0.370964$ $c = -1.88000$ $d = 0.284677$	-2.28684	-1.88180
$u = 0.25689 + 1.55234I$ $a = 1.066370 + 0.108716I$ $b = 1.72213 - 0.39249I$ $c = 0.088362 - 1.008150I$ $d = 0.10585 - 2.61952I$	$-7.65433 + 3.30324I$	$-7.16390 - 2.39821I$
$u = 0.25689 + 1.55234I$ $a = 1.066370 + 0.108716I$ $b = 1.72213 - 0.39249I$ $c = 0.567403 + 0.506935I$ $d = -0.308927 + 0.755560I$	$-7.65433 + 3.30324I$	$-7.16390 - 2.39821I$
$u = 0.25689 - 1.55234I$ $a = 1.066370 - 0.108716I$ $b = 1.72213 + 0.39249I$ $c = 0.088362 + 1.008150I$ $d = 0.10585 + 2.61952I$	$-7.65433 - 3.30324I$	$-7.16390 + 2.39821I$
$u = 0.25689 - 1.55234I$ $a = 1.066370 - 0.108716I$ $b = 1.72213 + 0.39249I$ $c = 0.567403 - 0.506935I$ $d = -0.308927 - 0.755560I$	$-7.65433 - 3.30324I$	$-7.16390 + 2.39821I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.50699+1.66583I$ $a=-1.177520+0.121564I$ $b=-1.86437-0.33459I$ $c=-0.143355-0.943399I$ $d=-0.15313-2.52888I$	$-11.16570-8.60203I$	$-9.58542+5.32797I$
$u=-0.50699+1.66583I$ $a=-1.177520+0.121564I$ $b=-1.86437-0.33459I$ $c=-0.543494+0.487244I$ $d=\quad 0.309381+0.852342I$	$-11.16570-8.60203I$	$-9.58542+5.32797I$
$u=-0.50699-1.66583I$ $a=-1.177520-0.121564I$ $b=-1.86437+0.33459I$ $c=-0.143355+0.943399I$ $d=-0.15313+2.52888I$	$-11.16570+8.60203I$	$-9.58542-5.32797I$
$u=-0.50699-1.66583I$ $a=-1.177520-0.121564I$ $b=-1.86437+0.33459I$ $c=-0.543494-0.487244I$ $d=\quad 0.309381-0.852342I$	$-11.16570+8.60203I$	$-9.58542-5.32797I$
$u=\quad 0.02169+1.76519I$ $a=-1.011620+0.245053I$ $b=-1.61220-0.23341I$ $c=\quad 0.005990-0.955765I$ $d=\quad 0.00639-2.56843I$	$-12.07010+1.38297I$	$-10.93425-0.71622I$
$u=\quad 0.02169+1.76519I$ $a=-1.011620+0.245053I$ $b=-1.61220-0.23341I$ $c=-0.606568+0.477299I$ $d=\quad 0.418568+0.712063I$	$-12.07010+1.38297I$	$-10.93425-0.71622I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.02169 - 1.76519I$ $a = -1.011620 - 0.245053I$ $b = -1.61220 + 0.23341I$ $c = 0.005990 + 0.955765I$ $d = 0.00639 + 2.56843I$	$-12.07010 - 1.38297I$	$-10.93425 + 0.71622I$
$u = 0.02169 - 1.76519I$ $a = -1.011620 - 0.245053I$ $b = -1.61220 + 0.23341I$ $c = -0.606568 - 0.477299I$ $d = 0.418568 - 0.712063I$	$-12.07010 - 1.38297I$	$-10.93425 + 0.71622I$

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

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0 \\ v+1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} v \\ -v-1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ -v \end{pmatrix}$$

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

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

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

$$a_7 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v - 1$

(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
$v = -0.500000 + 0.866025I$		
$a = 0$		
$b = 0.500000 + 0.866025I$	$-1.64493 - 2.02988I$	$-3.00000 + 3.46410I$
$c = -0.500000 + 0.866025I$		
$d = 0$		
$v = -0.500000 - 0.866025I$		
$a = 0$		
$b = 0.500000 - 0.866025I$	$-1.64493 + 2.02988I$	$-3.00000 - 3.46410I$
$c = -0.500000 - 0.866025I$		
$d = 0$		

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v-1$

(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
$v = -0.500000 + 0.866025I$ $a = 0$ $b = 0.500000 + 0.866025I$ $c = 0$ $d = -0.500000 - 0.866025I$	$-1.64493 - 2.02988I$	$-3.00000 + 3.46410I$
$v = -0.500000 - 0.866025I$ $a = 0$ $b = 0.500000 - 0.866025I$ $c = 0$ $d = -0.500000 + 0.866025I$	$-1.64493 + 2.02988I$	$-3.00000 - 3.46410I$

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

(i) Arc colorings

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

(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}, c_{12}	$u+1$
c_7, c_8, 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_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
$v = -1.00000$		
$a = 1.00000$		
$b = 0$	-3.28987	-12.0000
$c = 0$		
$d = -1.00000$		

VI. $I_4^v = \langle a,\ da - cb + 1,\ dv - 1,\ cv + ba + bv - a - v,\ b^2 - b + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(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
$v = \cdots$ $a = \cdots$ $b = \cdots$ $c = \cdots$ $d = \cdots$	$-3.28987 + 2.02988I$	$-9.43145 - 3.98230I$

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u^2-u+1)^2(u^{13}+8u^{12}+\cdots+5u-1)^2$ $\cdot\,(u^{21}+11u^{20}+\cdots+40u-16)$
c_2	$u(u^2+u+1)^2(u^{13}+2u^{12}+\cdots+u-1)^2(u^{21}+u^{20}+\cdots-12u-4)$
c_3	$u(u^2-u+1)^2(u^{13}-2u^{12}+\cdots+3u-1)^2$ $\cdot\,(u^{21}-u^{20}+\cdots-636u-612)$
c_4, c_9	$u^5(u^{13}-u^{12}+\cdots+4u+4)^2(u^{21}+3u^{20}+\cdots-32u-32)$
c_5	$u(u^2-u+1)^2(u^{13}+2u^{12}+\cdots+u-1)^2(u^{21}+u^{20}+\cdots-12u-4)$
c_6	$u^2(u-1)^2(u+1)(u^{21}-5u^{20}+\cdots-2u+1)$ $\cdot\,(u^{26}-3u^{25}+\cdots-24u-16)$
c_7, c_8	$u^2(u-1)^3(u^{21}-5u^{20}+\cdots-2u+1)(u^{26}-3u^{25}+\cdots-24u-16)$
c_{10}	$u^2(u+1)^3(u^{21}-5u^{20}+\cdots-2u+1)(u^{26}-3u^{25}+\cdots-24u-16)$
c_{11}	$u^2(u-1)(u+1)^2(u^{21}-5u^{20}+\cdots-2u+1)$ $\cdot\,(u^{26}-3u^{25}+\cdots-24u-16)$
c_{12}	$u^2(u+1)^3(u^{21}+31u^{20}+\cdots-4u+1)$ $\cdot\,(u^{26}+23u^{25}+\cdots+1824u+256)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y^2+y+1)^2(y^{13}-4y^{12}+\cdots+85y-1)^2$ $\cdot\,(y^{21}-y^{20}+\cdots+3616y-256)$
c_2, c_5	$y(y^2+y+1)^2(y^{13}+8y^{12}+\cdots+5y-1)^2$ $\cdot\,(y^{21}+11y^{20}+\cdots+40y-16)$
c_3	$y(y^2+y+1)^2(y^{13}-16y^{12}+\cdots+5y-1)^2$ $\cdot\,(y^{21}-13y^{20}+\cdots+1093608y-374544)$
c_4, c_9	$y^5(y^{13}+15y^{12}+\cdots-56y-16)^2$ $\cdot\,(y^{21}+15y^{20}+\cdots-4096y-1024)$
c_6, c_7, c_8 c_{10}, c_{11}	$y^2(y-1)^3(y^{21}-31y^{20}+\cdots-4y-1)$ $\cdot\,(y^{26}-23y^{25}+\cdots-1824y+256)$
c_{12}	$y^2(y-1)^3(y^{21}-71y^{20}+\cdots-144y-1)$ $\cdot\,(y^{26}-43y^{25}+\cdots-2728448y+65536)$