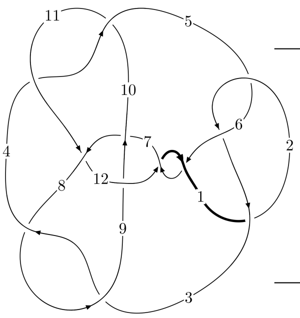
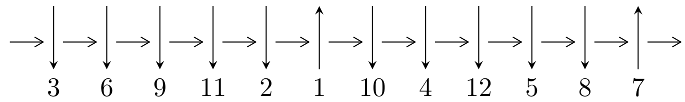
$12a_{0397}$ $(K12a_{0397})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 1908269u^{44} + 69257295u^{43} + \cdots + 524288b - 1459838517248, \\
& - 6600959u^{44} - 250923547u^{43} + \cdots + 1048576a - 5495160045568, \\
& u^{45} + 39u^{44} + \cdots + 23068672u + 1048576\rangle \\
I_2^u = \langle & -4.69815 \times 10^{233}a^{39}u - 6.24002 \times 10^{233}a^{38}u + \cdots - 1.03893 \times 10^{237}a + 1.05559 \times 10^{236}, \\
& 2a^{39}u + 21a^{38}u + \cdots + 142a - 33,\ u^2 - u + 1\rangle \\
I_3^u = \langle & -11u^{22} - 8u^{21} + \cdots + b + 40,\ -29u^{22} - 83u^{21} + \cdots + a + 3,\ u^{23} + 2u^{22} + \cdots - u + 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 148 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. $I_1^u = \langle 1.91 \times 10^6 u^{44} + 6.93 \times 10^7 u^{43} + \cdots + 5.24 \times 10^5 b - 1.46 \times 10^{12},\ -6.60 \times 10^6 u^{44} - 2.51 \times 10^8 u^{43} + \cdots + 1.05 \times 10^6 a - 5.50 \times 10^{12},\ u^{45} + 39u^{44} + \cdots + 23068672u + 1048576 \rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 6.29517u^{44} + 239.299u^{43} + \cdots + 1.12427 \times 10^8 u + 5240593 \\ -3.63973u^{44} - 132.098u^{43} + \cdots + 5.32322 \times 10^7 u + 2784421 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 2.65543u^{44} + 107.202u^{43} + \cdots + 1.65659 \times 10^8 u + 8025014 \\ -3.63973u^{44} - 132.098u^{43} + \cdots + 5.32322 \times 10^7 u + 2784421 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{1}{1024}u^{43} + \frac{37}{1024}u^{42} + \cdots + 10752u + \frac{1025}{2} \\ -0.000976563u^{44} - 0.0361328u^{43} + \cdots - 10752u^2 - 511.500u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 10.3764u^{44} + 403.507u^{43} + \cdots + 3.53442 \times 10^8 u + 1.68991 \times 10^7 \\ 11.0232u^{44} + 424.937u^{43} + \cdots + 3.09218 \times 10^8 u + 1.46969 \times 10^7 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.000976563u^{44} - 0.0371094u^{43} + \cdots - 11264.5u - 511.500 \\ \frac{1}{1024}u^{44} + \frac{37}{1024}u^{43} + \cdots + 10752u^2 + \frac{1025}{2}u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{1}{1024}u^{44} + \frac{45}{1024}u^{43} + \cdots + \frac{388097}{4}u + 4608 \\ -\frac{7}{1024}u^{44} - \frac{17}{64}u^{43} + \cdots - 154111u - 7168 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0998535u^{44} + 3.81567u^{43} + \cdots + 1630976u + 75265 \\ -0.0717773u^{44} - 2.68408u^{43} + \cdots - 383232u - 16128 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.245605u^{44} + 8.91406u^{43} + \cdots - 2.76384 \times 10^6 u - 142464 \\ 0.267578u^{44} + 10.4087u^{43} + \cdots + 7706241u + 364032 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -1.21094u^{44} - 46.2363u^{43} + \cdots - 2.15274 \times 10^7 u - 998527. \\ -1.38721u^{44} - 52.9595u^{43} + \cdots - 2.50382 \times 10^7 u - 1163264 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{1487947}{65536}u^{44} + \frac{6940087}{8192}u^{43} + \cdots + 108839472u + 4370874$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{45} + 24u^{44} + \cdots + 172u + 16$
c_2, c_5	$u^{45} + 6u^{44} + \cdots + 38u + 4$
c_3, c_4, c_8 c_{10}	$u^{45} + 15u^{43} + \cdots + 2u + 1$
c_6, c_{12}	$u^{45} + 18u^{44} + \cdots + 2834u + 188$
c_7, c_9	$u^{45} + u^{44} + \cdots - 7u + 1$
c_{11}	$u^{45} + 39u^{44} + \cdots + 23068672u + 1048576$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{45} - 4y^{44} + \cdots + 11504y - 256$
c_2, c_5	$y^{45} - 24y^{44} + \cdots + 172y - 16$
c_3, c_4, c_8 c_{10}	$y^{45} + 30y^{44} + \cdots + 2y - 1$
c_6, c_{12}	$y^{45} + 32y^{44} + \cdots + 315660y - 35344$
c_7, c_9	$y^{45} - 21y^{44} + \cdots + 65y - 1$
c_{11}	$y^{45} - 3y^{44} + \cdots + 9345848836096y - 1099511627776$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.298816 + 0.989953I$ $a = -0.117552 - 1.073810I$ $b = -0.660784 + 0.641263I$	$-5.72982 - 2.27070I$	0
$u = -0.298816 - 0.989953I$ $a = -0.117552 + 1.073810I$ $b = -0.660784 - 0.641263I$	$-5.72982 + 2.27070I$	0
$u = -0.926262 + 0.495766I$ $a = 0.273491 - 0.286793I$ $b = -0.759181 - 0.337100I$	$-4.38180 + 2.50542I$	0
$u = -0.926262 - 0.495766I$ $a = 0.273491 + 0.286793I$ $b = -0.759181 + 0.337100I$	$-4.38180 - 2.50542I$	0
$u = -0.919385 + 0.529264I$ $a = -0.306815 + 0.321928I$ $b = 0.814984 + 0.335175I$	$-7.68302 + 7.12344I$	0
$u = -0.919385 - 0.529264I$ $a = -0.306815 - 0.321928I$ $b = 0.814984 - 0.335175I$	$-7.68302 - 7.12344I$	0
$u = -0.967769 + 0.504465I$ $a = -0.313757 + 0.244824I$ $b = 0.757522 + 0.405488I$	$-8.11430 - 1.70581I$	0
$u = -0.967769 - 0.504465I$ $a = -0.313757 - 0.244824I$ $b = 0.757522 - 0.405488I$	$-8.11430 + 1.70581I$	0
$u = -1.088800 + 0.239432I$ $a = 0.1243660 - 0.0152569I$ $b = -0.349735 - 0.420577I$	$-3.24070 - 0.55670I$	0
$u = -1.088800 - 0.239432I$ $a = 0.1243660 + 0.0152569I$ $b = -0.349735 + 0.420577I$	$-3.24070 + 0.55670I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.198202 + 1.097100I$ $a = 0.142561 + 1.104920I$ $b = 0.575831 - 0.709841I$	$-2.07839 + 2.22551I$	0
$u = -0.198202 - 1.097100I$ $a = 0.142561 - 1.104920I$ $b = 0.575831 + 0.709841I$	$-2.07839 - 2.22551I$	0
$u = -0.748453 + 0.420636I$ $a = 0.044813 - 0.385321I$ $b = -0.672626 - 0.096659I$	$-1.42425 + 3.31805I$	0
$u = -0.748453 - 0.420636I$ $a = 0.044813 + 0.385321I$ $b = -0.672626 + 0.096659I$	$-1.42425 - 3.31805I$	0
$u = 1.137450 + 0.415999I$ $a = 0.056535 + 1.223700I$ $b = 0.076306 - 0.677052I$	$1.92192 + 2.39939I$	0
$u = 1.137450 - 0.415999I$ $a = 0.056535 - 1.223700I$ $b = 0.076306 + 0.677052I$	$1.92192 - 2.39939I$	0
$u = -0.316288 + 1.178330I$ $a = -0.124276 - 1.126580I$ $b = -0.636773 + 0.790453I$	$-5.70018 + 6.82908I$	0
$u = -0.316288 - 1.178330I$ $a = -0.124276 + 1.126580I$ $b = -0.636773 - 0.790453I$	$-5.70018 - 6.82908I$	0
$u = -0.489115 + 0.309548I$ $a = 0.313689 + 0.454525I$ $b = 0.529742 - 0.075882I$	$-0.730208 - 0.083656I$	0
$u = -0.489115 - 0.309548I$ $a = 0.313689 - 0.454525I$ $b = 0.529742 + 0.075882I$	$-0.730208 + 0.083656I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.497869$ $a = 0.450653$ $b = 0.446828$	-0.768321	0
$u = -0.87680 + 1.39604I$ $a = -0.302809 - 1.259470I$ $b = -0.61138 + 1.39569I$	$-1.64377 + 9.31582I$	0
$u = -0.87680 - 1.39604I$ $a = -0.302809 + 1.259470I$ $b = -0.61138 - 1.39569I$	$-1.64377 - 9.31582I$	0
$u = -0.90557 + 1.38569I$ $a = -0.325344 - 1.265460I$ $b = -0.59960 + 1.43721I$	$-0.4610 + 18.4165I$	0
$u = -0.90557 - 1.38569I$ $a = -0.325344 + 1.265460I$ $b = -0.59960 - 1.43721I$	$-0.4610 - 18.4165I$	0
$u = -0.89990 + 1.39988I$ $a = 0.319514 + 1.255210I$ $b = 0.58882 - 1.41851I$	$2.67201 + 13.38930I$	0
$u = -0.89990 - 1.39988I$ $a = 0.319514 - 1.255210I$ $b = 0.58882 + 1.41851I$	$2.67201 - 13.38930I$	0
$u = -1.66275 + 0.46895I$ $a = -0.248878 - 0.405451I$ $b = 0.210659 + 0.990181I$	$-4.73342 - 0.73218I$	0
$u = -1.66275 - 0.46895I$ $a = -0.248878 + 0.405451I$ $b = 0.210659 - 0.990181I$	$-4.73342 + 0.73218I$	0
$u = -0.77091 + 1.54748I$ $a = 0.250065 + 1.181600I$ $b = 0.520537 - 1.229120I$	$1.55549 + 7.27021I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.77091-1.54748I$ $a=\ \ 0.250065-1.181600I$ $b=\ \ 0.520537+1.229120I$	$1.55549-7.27021I$	0
$u=-0.93055+1.47612I$ $a=\ \ 0.326629+1.202060I$ $b=\ \ 0.49630-1.38462I$	$6.74317+12.42830I$	0
$u=-0.93055-1.47612I$ $a=\ \ 0.326629-1.202060I$ $b=\ \ 0.49630+1.38462I$	$6.74317-12.42830I$	0
$u=-0.92821+1.52975I$ $a=-0.314902-1.176640I$ $b=-0.46221+1.34602I$	$7.57419+7.55749I$	0
$u=-0.92821-1.52975I$ $a=-0.314902+1.176640I$ $b=-0.46221-1.34602I$	$7.57419-7.55749I$	0
$u=-1.75215+0.63639I$ $a=-0.297374-0.502556I$ $b=\ \ 0.198323+1.086910I$	$-3.21485-9.54783I$	0
$u=-1.75215-0.63639I$ $a=-0.297374+0.502556I$ $b=\ \ 0.198323-1.086910I$	$-3.21485+9.54783I$	0
$u=-1.80049+0.55270I$ $a=\ \ 0.247640+0.493732I$ $b=-0.168749-1.056050I$	$-0.29405-4.47039I$	0
$u=-1.80049-0.55270I$ $a=\ \ 0.247640-0.493732I$ $b=-0.168749+1.056050I$	$-0.29405+4.47039I$	0
$u=-0.87811+1.69637I$ $a=-0.272990-1.129230I$ $b=-0.400769+1.241740I$	$6.69869+5.23471I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.87811 - 1.69637I$ $a = -0.272990 + 1.129230I$ $b = -0.400769 - 1.241740I$	$6.69869 - 5.23471I$	0
$u = -0.84113 + 1.84473I$ $a = 0.248866 + 1.102950I$ $b = 0.356157 - 1.185750I$	$4.90627 + 0.20772I$	0
$u = -0.84113 - 1.84473I$ $a = 0.248866 - 1.102950I$ $b = 0.356157 + 1.185750I$	$4.90627 - 0.20772I$	0
$u = -2.18886 + 0.16892I$ $a = 0.051200 + 0.568765I$ $b = -0.026784 - 1.043710I$	$2.93772 - 2.57806I$	0
$u = -2.18886 - 0.16892I$ $a = 0.051200 - 0.568765I$ $b = -0.026784 + 1.043710I$	$2.93772 + 2.57806I$	0

II. $\boldsymbol{I^u_2 = \langle -4.70\times 10^{233}a^{39}u - 6.24\times 10^{233}a^{38}u + \cdots - 1.04\times 10^{237}a + 1.06\times 10^{236},\ 2a^{39}u + 21a^{38}u + \cdots + 142a - 33,\ u^2 - u + 1\rangle}$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} a \\ 0.00205561a^{39}u + 0.00273024a^{38}u + \cdots + 4.54569a - 0.461858 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 0.00205561a^{39}u + 0.00273024a^{38}u + \cdots + 5.54569a - 0.461858 \\ 0.00205561a^{39}u + 0.00273024a^{38}u + \cdots + 4.54569a - 0.461858 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.000862208a^{39}u + 0.000899759a^{38}u + \cdots - 0.242076a + 0.813630 \\ -0.000364350a^{39}u + 0.00216092a^{38}u + \cdots + 0.166117a + 0.454919 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.000192689a^{39}u - 0.00330351a^{38}u + \cdots + 4.35116a + 0.103482 \\ -0.00192222a^{39}u + 0.000432146a^{38}u + \cdots + 1.19703a - 0.0456529 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.000862208a^{39}u - 0.000899759a^{38}u + \cdots + 0.242076a + 1.18637 \\ -0.00308448a^{39}u + 0.00143811a^{38}u + \cdots - 1.13442a - 1.20040 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.000354572a^{39}u - 0.000538750a^{38}u + \cdots - 0.171861a + 0.357600 \\ 0.000286009a^{39}u + 0.000105031a^{38}u + \cdots + 0.617988a + 0.351373 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.0000706296a^{39}u - 0.000562200a^{38}u + \cdots + 0.412914a - 0.859285 \\ 0.00181884a^{39}u + 0.00345821a^{38}u + \cdots - 0.844918a - 0.506231 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.00463429a^{39}u - 0.00244524a^{38}u + \cdots + 1.18427a + 2.37145 \\ 0.00370820a^{39}u + 0.00576929a^{38}u + \cdots - 1.20106a - 2.81103 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.00374070a^{39}u + 0.00316369a^{38}u + \cdots - 8.66531a - 1.32879 \\ -0.00721432a^{39}u + 0.00732931a^{38}u + \cdots - 5.27593a + 1.01325 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.0241933a^{39}u + 0.0327742a^{38}u + \cdots + 13.1336a - 21.3800$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{20} + 11u^{19} + \cdots + 2u + 1)^4$
c_2, c_5	$(u^{20} - u^{19} + \cdots + 2u - 1)^4$
c_3, c_4, c_8 c_{10}	$u^{80} - u^{79} + \cdots + 35792u + 15097$
c_6, c_{12}	$(u^{20} - 3u^{19} + \cdots - 12u + 1)^4$
c_7, c_9	$u^{80} - 21u^{79} + \cdots + 36u + 169$
c_{11}	$(u^2 - u + 1)^{40}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{20} - 3y^{19} + \cdots - 6y + 1)^4$
c_2, c_5	$(y^{20} - 11y^{19} + \cdots - 2y + 1)^4$
c_3, c_4, c_8 c_{10}	$y^{80} + 63y^{79} + \cdots + 4240509516y + 227919409$
c_6, c_{12}	$(y^{20} + 17y^{19} + \cdots - 62y + 1)^4$
c_7, c_9	$y^{80} + 11y^{79} + \cdots - 716504y + 28561$
c_{11}	$(y^2 + y + 1)^{40}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.500000 + 0.866025I$ $a = 0.223301 - 0.984504I$ $b = -0.721069 + 0.935523I$	$-5.08534 + 7.61442I$	$-9.65468 - 2.74133I$
$u = 0.500000 + 0.866025I$ $a = -0.161727 + 0.977147I$ $b = 0.679884 - 0.852689I$	$-1.84893 + 2.76931I$	$-6.69810 + 0.36946I$
$u = 0.500000 + 0.866025I$ $a = -0.872992 + 0.525012I$ $b = -0.450422 - 1.018540I$	$3.95796 - 2.02988I$	$-8.93879 + 3.46410I$
$u = 0.500000 + 0.866025I$ $a = 0.521612 + 0.826124I$ $b = 0.311528 - 0.160068I$	$1.94981 + 2.81121I$	$-5.63163 - 2.91571I$
$u = 0.500000 + 0.866025I$ $a = -0.499155 + 0.940951I$ $b = -0.65006 - 1.49725I$	$6.19099 - 3.97633I$	$0.94680 + 8.28286I$
$u = 0.500000 + 0.866025I$ $a = 0.171118 - 0.891526I$ $b = -0.788373 + 0.790387I$	$-5.88315 - 1.39328I$	$-10.96035 + 3.63399I$
$u = 0.500000 + 0.866025I$ $a = -0.417061 + 0.760824I$ $b = -0.83097 - 1.32637I$	$4.01885 - 3.83436I$	$-2.82463 + 7.16468I$
$u = 0.500000 + 0.866025I$ $a = 0.355095 - 0.780475I$ $b = 0.90175 + 1.37031I$	$0.92426 - 8.30305I$	$-6.10015 + 10.00758I$
$u = 0.500000 + 0.866025I$ $a = 0.531113 - 1.032670I$ $b = 0.54401 + 1.57078I$	$6.19099 - 0.08344I$	$0.94680 - 1.35465I$
$u = 0.500000 + 0.866025I$ $a = 0.375110 - 0.675074I$ $b = 0.90343 + 1.23362I$	$0.496471 + 0.114015I$	$-7.45592 + 3.22103I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 + 0.866025I$ $a = -0.528289 + 1.180870I$ $b = -0.35513 - 1.72050I$	$0.92426 + 4.24328I$	$-8.00000 + 0.I$
$u = 0.500000 + 0.866025I$ $a = 0.560866 - 1.168870I$ $b = 0.35123 + 1.65493I$	$4.01885 - 0.22541I$	0
$u = 0.500000 + 0.866025I$ $a = -0.455734 - 0.521331I$ $b = -0.539610 - 0.030941I$	$2.99206 - 1.44519I$	$-3.20205 + 3.45501I$
$u = 0.500000 + 0.866025I$ $a = -0.565033 + 1.216060I$ $b = -0.26427 - 1.66859I$	$0.49647 - 4.17378I$	0
$u = 0.500000 + 0.866025I$ $a = -0.17739 + 1.40437I$ $b = 0.160251 - 1.054550I$	$1.94981 + 2.81121I$	0
$u = 0.500000 + 0.866025I$ $a = 0.043628 + 0.507114I$ $b = 0.928213 - 0.215774I$	$-1.59840 - 2.02988I$	$-11.89977 + 3.46410I$
$u = 0.500000 + 0.866025I$ $a = 0.87299 - 1.27368I$ $b = 0.234300 + 1.392880I$	$3.95796 - 2.02988I$	0
$u = 0.500000 + 0.866025I$ $a = 1.55443 - 0.33903I$ $b = 0.022743 + 0.944463I$	$0.49647 - 4.17378I$	0
$u = 0.500000 + 0.866025I$ $a = 0.27721 - 1.58998I$ $b = 0.019390 + 1.138130I$	$2.99206 - 1.44519I$	0
$u = 0.500000 + 0.866025I$ $a = 0.54980 + 1.52611I$ $b = -0.151295 - 0.510966I$	$-1.84893 + 2.76931I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 + 0.866025I$ $a = -1.57372 + 0.50963I$ $b = -0.035102 - 1.032930I$	$4.01885 - 0.22541I$	0
$u = 0.500000 + 0.866025I$ $a = -0.223415 - 0.228493I$ $b = -0.909375 - 0.182307I$	$2.99206 - 2.61458I$	$-3.20205 + 3.47320I$
$u = 0.500000 + 0.866025I$ $a = -0.65612 - 1.54780I$ $b = 0.206465 + 0.455571I$	$-5.08534 + 7.61442I$	0
$u = 0.500000 + 0.866025I$ $a = 0.157128 - 0.259381I$ $b = -1.328830 + 0.069336I$	$-5.88315 - 2.66649I$	$-10.96035 + 3.29421I$
$u = 0.500000 + 0.866025I$ $a = -0.51135 - 1.66307I$ $b = 0.221039 + 0.585128I$	$-5.88315 - 1.39328I$	0
$u = 0.500000 + 0.866025I$ $a = -0.132043 + 0.215117I$ $b = 1.324980 + 0.002145I$	$-1.84893 - 6.82908I$	$-6.69810 + 6.55874I$
$u = 0.500000 + 0.866025I$ $a = 0.161659 - 0.191649I$ $b = -1.376880 - 0.014061I$	$-5.08534 - 11.67420I$	$-9.65468 + 9.66953I$
$u = 0.500000 + 0.866025I$ $a = 1.69318 - 0.48218I$ $b = -0.025625 + 1.034880I$	$0.92426 + 4.24328I$	0
$u = 0.500000 + 0.866025I$ $a = -1.56080 + 0.88587I$ $b = -0.071541 - 1.200140I$	$6.19099 - 0.08344I$	0
$u = 0.500000 + 0.866025I$ $a = 0.068505 + 0.163465I$ $b = 1.111960 + 0.176330I$	$1.94981 - 6.87098I$	$-5.63163 + 9.84391I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.500000+0.866025I$ $a = 1.52884-1.08774I$ $b = 0.092842+1.273400I$	$6.19099-3.97633I$	0
$u = 0.500000+0.866025I$ $a = -0.04363+1.89905I$ $b = -0.233613-0.987309I$	$-1.59840-2.02988I$	0
$u = 0.500000+0.866025I$ $a = 0.40194-1.88281I$ $b = 0.210631+1.186430I$	$2.99206-2.61458I$	0
$u = 0.500000+0.866025I$ $a = 1.42992-1.42006I$ $b = 0.134239+1.363600I$	$4.01885-3.83436I$	0
$u = 0.500000+0.866025I$ $a = -1.36451+1.55210I$ $b = -0.155551-1.386520I$	$0.496471+0.114015I$	0
$u = 0.500000+0.866025I$ $a = -0.41272+2.06703I$ $b = -0.295962-1.192210I$	$1.94981-6.87098I$	0
$u = 0.500000+0.866025I$ $a = -1.51999+1.47916I$ $b = -0.117609-1.383380I$	$0.92426-8.30305I$	0
$u = 0.500000+0.866025I$ $a = -0.25603+2.28814I$ $b = -0.408313-1.141740I$	$-1.84893-6.82908I$	0
$u = 0.500000+0.866025I$ $a = 0.18310-2.29522I$ $b = 0.421267+1.109750I$	$-5.88315-2.66649I$	0
$u = 0.500000+0.866025I$ $a = 0.27116-2.34065I$ $b = 0.429461+1.155270I$	$-5.08534-11.67420I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 - 0.866025I$ $a = 0.223301 + 0.984504I$ $b = -0.721069 - 0.935523I$	$-5.08534 - 7.61442I$	$-9.65468 + 2.74133I$
$u = 0.500000 - 0.866025I$ $a = -0.161727 - 0.977147I$ $b = 0.679884 + 0.852689I$	$-1.84893 - 2.76931I$	$-6.69810 - 0.36946I$
$u = 0.500000 - 0.866025I$ $a = -0.872992 - 0.525012I$ $b = -0.450422 + 1.018540I$	$3.95796 + 2.02988I$	$-8.93879 - 3.46410I$
$u = 0.500000 - 0.866025I$ $a = 0.521612 - 0.826124I$ $b = 0.311528 + 0.160068I$	$1.94981 - 2.81121I$	$-5.63163 + 2.91571I$
$u = 0.500000 - 0.866025I$ $a = -0.499155 - 0.940951I$ $b = -0.65006 + 1.49725I$	$6.19099 + 3.97633I$	$0.94680 - 8.28286I$
$u = 0.500000 - 0.866025I$ $a = 0.171118 + 0.891526I$ $b = -0.788373 - 0.790387I$	$-5.88315 + 1.39328I$	$-10.96035 - 3.63399I$
$u = 0.500000 - 0.866025I$ $a = -0.417061 - 0.760824I$ $b = -0.83097 + 1.32637I$	$4.01885 + 3.83436I$	$-2.82463 - 7.16468I$
$u = 0.500000 - 0.866025I$ $a = 0.355095 + 0.780475I$ $b = 0.90175 - 1.37031I$	$0.92426 + 8.30305I$	$-6.10015 - 10.00758I$
$u = 0.500000 - 0.866025I$ $a = 0.531113 + 1.032670I$ $b = 0.54401 - 1.57078I$	$6.19099 + 0.08344I$	$0.94680 + 1.35465I$
$u = 0.500000 - 0.866025I$ $a = 0.375110 + 0.675074I$ $b = 0.90343 - 1.23362I$	$0.496471 - 0.114015I$	$-7.45592 - 3.22103I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.500000 - 0.866025I$ $a = -0.528289 - 1.180870I$ $b = -0.35513 + 1.72050I$	$0.92426 - 4.24328I$	$-8.00000 + 0.I$
$u = \quad 0.500000 - 0.866025I$ $a = \quad 0.560866 + 1.168870I$ $b = \quad 0.35123 - 1.65493I$	$4.01885 + 0.22541I$	0
$u = \quad 0.500000 - 0.866025I$ $a = -0.455734 + 0.521331I$ $b = -0.539610 + 0.030941I$	$2.99206 + 1.44519I$	$-3.20205 - 3.45501I$
$u = \quad 0.500000 - 0.866025I$ $a = -0.565033 - 1.216060I$ $b = -0.26427 + 1.66859I$	$0.49647 + 4.17378I$	0
$u = \quad 0.500000 - 0.866025I$ $a = -0.17739 - 1.40437I$ $b = \quad 0.160251 + 1.054550I$	$1.94981 - 2.81121I$	0
$u = \quad 0.500000 - 0.866025I$ $a = \quad 0.043628 - 0.507114I$ $b = \quad 0.928213 + 0.215774I$	$-1.59840 + 2.02988I$	$-11.89977 - 3.46410I$
$u = \quad 0.500000 - 0.866025I$ $a = \quad 0.87299 + 1.27368I$ $b = \quad 0.234300 - 1.392880I$	$3.95796 + 2.02988I$	0
$u = \quad 0.500000 - 0.866025I$ $a = \quad 1.55443 + 0.33903I$ $b = \quad 0.022743 - 0.944463I$	$0.49647 + 4.17378I$	0
$u = \quad 0.500000 - 0.866025I$ $a = \quad 0.27721 + 1.58998I$ $b = \quad 0.019390 - 1.138130I$	$2.99206 + 1.44519I$	0
$u = \quad 0.500000 - 0.866025I$ $a = \quad 0.54980 - 1.52611I$ $b = -0.151295 + 0.510966I$	$-1.84893 - 2.76931I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 - 0.866025I$ $a = -1.57372 - 0.50963I$ $b = -0.035102 + 1.032930I$	$4.01885 + 0.22541I$	0
$u = 0.500000 - 0.866025I$ $a = -0.223415 + 0.228493I$ $b = -0.909375 + 0.182307I$	$2.99206 + 2.61458I$	$-3.20205 - 3.47320I$
$u = 0.500000 - 0.866025I$ $a = -0.65612 + 1.54780I$ $b = 0.206465 - 0.455571I$	$-5.08534 - 7.61442I$	0
$u = 0.500000 - 0.866025I$ $a = 0.157128 + 0.259381I$ $b = -1.328830 - 0.069336I$	$-5.88315 + 2.66649I$	$-10.96035 - 3.29421I$
$u = 0.500000 - 0.866025I$ $a = -0.51135 + 1.66307I$ $b = 0.221039 - 0.585128I$	$-5.88315 + 1.39328I$	0
$u = 0.500000 - 0.866025I$ $a = -0.132043 - 0.215117I$ $b = 1.324980 - 0.002145I$	$-1.84893 + 6.82908I$	$-6.69810 - 6.55874I$
$u = 0.500000 - 0.866025I$ $a = 0.161659 + 0.191649I$ $b = -1.376880 + 0.014061I$	$-5.08534 + 11.67420I$	$-9.65468 - 9.66953I$
$u = 0.500000 - 0.866025I$ $a = 1.69318 + 0.48218I$ $b = -0.025625 - 1.034880I$	$0.92426 - 4.24328I$	0
$u = 0.500000 - 0.866025I$ $a = -1.56080 - 0.88587I$ $b = -0.071541 + 1.200140I$	$6.19099 + 0.08344I$	0
$u = 0.500000 - 0.866025I$ $a = 0.068505 - 0.163465I$ $b = 1.111960 - 0.176330I$	$1.94981 + 6.87098I$	$-5.63163 - 9.84391I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 - 0.866025I$ $a = 1.52884 + 1.08774I$ $b = 0.092842 - 1.273400I$	$6.19099 + 3.97633I$	0
$u = 0.500000 - 0.866025I$ $a = -0.04363 - 1.89905I$ $b = -0.233613 + 0.987309I$	$-1.59840 + 2.02988I$	0
$u = 0.500000 - 0.866025I$ $a = 0.40194 + 1.88281I$ $b = 0.210631 - 1.186430I$	$2.99206 + 2.61458I$	0
$u = 0.500000 - 0.866025I$ $a = 1.42992 + 1.42006I$ $b = 0.134239 - 1.363600I$	$4.01885 + 3.83436I$	0
$u = 0.500000 - 0.866025I$ $a = -1.36451 - 1.55210I$ $b = -0.155551 + 1.386520I$	$0.496471 - 0.114015I$	0
$u = 0.500000 - 0.866025I$ $a = -0.41272 - 2.06703I$ $b = -0.295962 + 1.192210I$	$1.94981 + 6.87098I$	0
$u = 0.500000 - 0.866025I$ $a = -1.51999 - 1.47916I$ $b = -0.117609 + 1.383380I$	$0.92426 + 8.30305I$	0
$u = 0.500000 - 0.866025I$ $a = -0.25603 - 2.28814I$ $b = -0.408313 + 1.141740I$	$-1.84893 + 6.82908I$	0
$u = 0.500000 - 0.866025I$ $a = 0.18310 + 2.29522I$ $b = 0.421267 - 1.109750I$	$-5.88315 + 2.66649I$	0
$u = 0.500000 - 0.866025I$ $a = 0.27116 + 2.34065I$ $b = 0.429461 - 1.155270I$	$-5.08534 + 11.67420I$	0

III. $I_3^u = \langle -11u^{22}-8u^{21}+\cdots+b+40,\ -29u^{22}-83u^{21}+\cdots+a+3,\ u^{23}+2u^{22}+\cdots-u+1\rangle$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} 29u^{22}+83u^{21}+\cdots+45u-3 \\ 11u^{22}+8u^{21}+\cdots-3u-40 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 40u^{22}+91u^{21}+\cdots+42u-43 \\ 11u^{22}+8u^{21}+\cdots-3u-40 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -2u^{22}-5u^{21}+\cdots-8u+1 \\ -u^{22}-2u^{21}+\cdots-6u^2+2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -43u^{22}-126u^{21}+\cdots-67u+1 \\ -26u^{22}-43u^{21}+\cdots-13u+54 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^{22}-3u^{21}+\cdots-5u^2-7u \\ -u^{22}-2u^{21}+\cdots-u+2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^{21}-3u^{20}+\cdots-5u-7 \\ -2u^{22}-5u^{21}+\cdots-7u+1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -11u^{22}-28u^{21}+\cdots-26u+6 \\ -5u^{22}-9u^{21}+\cdots-9u^2+16 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -14u^{22}-23u^{21}+\cdots+3u+40 \\ 13u^{22}+39u^{21}+\cdots+40u+5 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 30u^{22}+69u^{21}+\cdots+35u-32 \\ u^{22}-6u^{21}+\cdots-16u-21 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -101u^{22}-241u^{21}-63u^{20}-438u^{19}-1512u^{18}-929u^{17}-817u^{16}-3145u^{15}-2707u^{14}-726u^{13}-3279u^{12}-3820u^{11}-319u^{10}-1123u^{9}-2832u^{8}-256u^{7}+468u^{6}-1028u^{5}-293u^{4}+427u^{3}-102u^{2}-118u+87$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{23} - 13u^{22} + \cdots + 5u - 1$
c_2	$u^{23} + u^{22} + \cdots - u - 1$
c_3, c_{10}	$u^{23} + 12u^{21} + \cdots + 3u - 1$
c_4, c_8	$u^{23} + 12u^{21} + \cdots + 3u + 1$
c_5	$u^{23} - u^{22} + \cdots - u + 1$
c_6	$u^{23} - 3u^{22} + \cdots + 3u + 1$
c_7, c_9	$u^{23} + u^{22} + \cdots + 2u - 1$
c_{11}	$u^{23} + 2u^{22} + \cdots - u + 1$
c_{12}	$u^{23} + 3u^{22} + \cdots + 3u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{23} - y^{22} + \cdots + 9y - 1$
c_2, c_5	$y^{23} - 13y^{22} + \cdots + 5y - 1$
c_3, c_4, c_8 c_{10}	$y^{23} + 24y^{22} + \cdots + 5y - 1$
c_6, c_{12}	$y^{23} + 15y^{22} + \cdots + 43y - 1$
c_7, c_9	$y^{23} + y^{22} + \cdots + 4y - 1$
c_{11}	$y^{23} - 4y^{22} + \cdots - y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_3	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.891523+0.539467I$ $a=-0.465440-1.290310I$ $b=\ \ 0.417800+0.594568I$	$-2.06437-3.95440I$	$-8.63156+6.09948I$
$u=-0.891523-0.539467I$ $a=-0.465440+1.290310I$ $b=\ \ 0.417800-0.594568I$	$-2.06437+3.95440I$	$-8.63156-6.09948I$
$u=-0.772619+0.561019I$ $a=\ \ 0.52054+1.46048I$ $b=-0.490640-0.627106I$	$-5.20691-8.91486I$	$-10.68690+8.90274I$
$u=-0.772619-0.561019I$ $a=\ \ 0.52054-1.46048I$ $b=-0.490640+0.627106I$	$-5.20691+8.91486I$	$-10.68690-8.90274I$
$u=-0.948923$ $a=-0.476498$ $b=\ \ 0.232005$	-3.06830	-9.64660
$u=-0.853358+0.383068I$ $a=\ \ 0.687818+1.149760I$ $b=-0.454872-0.481247I$	$-6.25538+0.06461I$	$-13.33134+1.68019I$
$u=-0.853358-0.383068I$ $a=\ \ 0.687818-1.149760I$ $b=-0.454872+0.481247I$	$-6.25538-0.06461I$	$-13.33134-1.68019I$
$u=\ \ 0.260940+1.058470I$ $a=\ \ 0.74302-1.25125I$ $b=\ \ 0.381175+1.168270I$	$3.61187-4.35423I$	$-4.17455+6.43852I$
$u=\ \ 0.260940-1.058470I$ $a=\ \ 0.74302+1.25125I$ $b=\ \ 0.381175-1.168270I$	$3.61187+4.35423I$	$-4.17455-6.43852I$
$u=\ \ 0.755052+0.791973I$ $a=-0.767365+0.648951I$ $b=-0.254019-1.301980I$	$5.36340-2.81228I$	$-2.58785+3.59508I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.755052 - 0.791973I$ $a = -0.767365 - 0.648951I$ $b = -0.254019 + 1.301980I$	$5.36340 + 2.81228I$	$-2.58785 - 3.59508I$
$u = 0.357379 + 0.820793I$ $a = -1.07541 + 1.11627I$ $b = -0.403716 - 1.268430I$	$4.71667 - 1.35723I$	$-1.00741 - 1.61688I$
$u = 0.357379 - 0.820793I$ $a = -1.07541 - 1.11627I$ $b = -0.403716 + 1.268430I$	$4.71667 + 1.35723I$	$-1.00741 + 1.61688I$
$u = 0.487371 + 0.607807I$ $a = -1.32119 + 0.63458I$ $b = -0.36016 - 1.39021I$	$3.92488 - 2.52107I$	$-3.55346 + 0.94577I$
$u = 0.487371 - 0.607807I$ $a = -1.32119 - 0.63458I$ $b = -0.36016 + 1.39021I$	$3.92488 + 2.52107I$	$-3.55346 - 0.94577I$
$u = 0.493262 + 0.533153I$ $a = 1.42724 - 0.44917I$ $b = 0.35215 + 1.43492I$	$0.80414 - 6.84512I$	$-6.80922 + 4.56757I$
$u = 0.493262 - 0.533153I$ $a = 1.42724 + 0.44917I$ $b = 0.35215 - 1.43492I$	$0.80414 + 6.84512I$	$-6.80922 - 4.56757I$
$u = 0.412195 + 0.581577I$ $a = 1.53236 - 0.73131I$ $b = 0.40701 + 1.40600I$	$0.56415 + 1.51972I$	$-7.03913 - 2.65885I$
$u = 0.412195 - 0.581577I$ $a = 1.53236 + 0.73131I$ $b = 0.40701 - 1.40600I$	$0.56415 - 1.51972I$	$-7.03913 + 2.65885I$
$u = 0.91123 + 1.19260I$ $a = 0.507332 - 0.834010I$ $b = 0.219623 + 1.205300I$	$4.37259 + 1.11056I$	$-5.33341 - 2.98849I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.91123 - 1.19260I$ $a = 0.507332 + 0.834010I$ $b = 0.219623 - 1.205300I$	$4.37259 - 1.11056I$	$-5.33341 + 2.98849I$
$u = -1.68547 + 0.26457I$ $a = -0.050661 - 1.036720I$ $b = 0.069646 + 0.652543I$	$1.57271 - 2.56456I$	$-19.0218 + 7.7387I$
$u = -1.68547 - 0.26457I$ $a = -0.050661 + 1.036720I$ $b = 0.069646 - 0.652543I$	$1.57271 + 2.56456I$	$-19.0218 - 7.7387I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^{20}+11u^{19}+\cdots+2u+1)^4)(u^{23}-13u^{22}+\cdots+5u-1)$ $\cdot(u^{45}+24u^{44}+\cdots+172u+16)$
c_2	$((u^{20}-u^{19}+\cdots+2u-1)^4)(u^{23}+u^{22}+\cdots-u-1)$ $\cdot(u^{45}+6u^{44}+\cdots+38u+4)$
c_3, c_{10}	$(u^{23}+12u^{21}+\cdots+3u-1)(u^{45}+15u^{43}+\cdots+2u+1)$ $\cdot(u^{80}-u^{79}+\cdots+35792u+15097)$
c_4, c_8	$(u^{23}+12u^{21}+\cdots+3u+1)(u^{45}+15u^{43}+\cdots+2u+1)$ $\cdot(u^{80}-u^{79}+\cdots+35792u+15097)$
c_5	$((u^{20}-u^{19}+\cdots+2u-1)^4)(u^{23}-u^{22}+\cdots-u+1)$ $\cdot(u^{45}+6u^{44}+\cdots+38u+4)$
c_6	$((u^{20}-3u^{19}+\cdots-12u+1)^4)(u^{23}-3u^{22}+\cdots+3u+1)$ $\cdot(u^{45}+18u^{44}+\cdots+2834u+188)$
c_7, c_9	$(u^{23}+u^{22}+\cdots+2u-1)(u^{45}+u^{44}+\cdots-7u+1)$ $\cdot(u^{80}-21u^{79}+\cdots+36u+169)$
c_{11}	$((u^2-u+1)^{40})(u^{23}+2u^{22}+\cdots-u+1)$ $\cdot(u^{45}+39u^{44}+\cdots+23068672u+1048576)$
c_{12}	$((u^{20}-3u^{19}+\cdots-12u+1)^4)(u^{23}+3u^{22}+\cdots+3u-1)$ $\cdot(u^{45}+18u^{44}+\cdots+2834u+188)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^{20} - 3y^{19} + \cdots - 6y + 1)^4)(y^{23} - y^{22} + \cdots + 9y - 1)$ $\cdot (y^{45} - 4y^{44} + \cdots + 11504y - 256)$
c_2, c_5	$((y^{20} - 11y^{19} + \cdots - 2y + 1)^4)(y^{23} - 13y^{22} + \cdots + 5y - 1)$ $\cdot (y^{45} - 24y^{44} + \cdots + 172y - 16)$
c_3, c_4, c_8 c_{10}	$(y^{23} + 24y^{22} + \cdots + 5y - 1)(y^{45} + 30y^{44} + \cdots + 2y - 1)$ $\cdot (y^{80} + 63y^{79} + \cdots + 4240509516y + 227919409)$
c_6, c_{12}	$((y^{20} + 17y^{19} + \cdots - 62y + 1)^4)(y^{23} + 15y^{22} + \cdots + 43y - 1)$ $\cdot (y^{45} + 32y^{44} + \cdots + 315660y - 35344)$
c_7, c_9	$(y^{23} + y^{22} + \cdots + 4y - 1)(y^{45} - 21y^{44} + \cdots + 65y - 1)$ $\cdot (y^{80} + 11y^{79} + \cdots - 716504y + 28561)$
c_{11}	$((y^2 + y + 1)^{40})(y^{23} - 4y^{22} + \cdots - y - 1)$ $\cdot (y^{45} - 3y^{44} + \cdots + 9345848836096y - 1099511627776)$