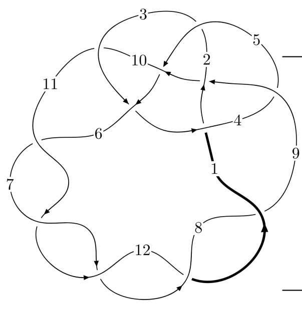
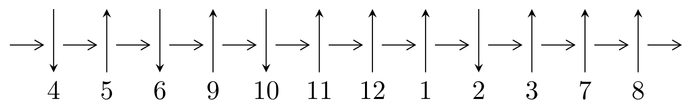
$12a_{0805}$ $(K12a_{0805})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -437u^{29} + 1525u^{28} + \cdots + 13b + 2231,\ 5117u^{29} - 17060u^{28} + \cdots + 143a - 29622, \\
&\quad u^{30} - 5u^{29} + \cdots - 38u + 11\rangle \\
I_2^u &= \langle -269u^{22}a + 526u^{22} + \cdots - 286a - 712,\ 2u^{22}a + 3u^{22} + \cdots - 7a - 6,\ u^{23} + 2u^{22} + \cdots - 2u + 1\rangle \\
I_3^u &= \langle u^8 - u^7 - 5u^6 + 5u^5 + 7u^4 - 6u^3 - 4u^2 + b + 2u,\ -u^2 + a + 2, \\
&\quad u^9 - 2u^8 - 5u^7 + 11u^6 + 6u^5 - 17u^4 - u^3 + 8u^2 - u + 1\rangle \\
I_4^u &= \langle b + a - u - 1,\ a^2 - 3au - 2a + u + 2,\ u^2 + u - 1\rangle
\end{aligned}$$

$$I_1^v = \langle a,\ b - 1,\ v + 1\rangle$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 90 representations.

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

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

I. $\boldsymbol{I_1^u = \langle -437u^{29} + 1525u^{28} + \cdots + 13b + 2231,\ 5117u^{29} - 17060u^{28} + \cdots + 143a - 29622,\ u^{30} - 5u^{29} + \cdots - 38u + 11\rangle}$

(i) Arc colorings

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

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

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

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

$$a_1 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -35.7832u^{29} + 119.301u^{28} + \cdots - 569.783u + 207.147 \\ 33.6154u^{29} - 117.308u^{28} + \cdots + 442.615u - 171.615 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -21.4755u^{29} + 79.1469u^{28} + \cdots - 257.476u + 109.839 \\ 19.3077u^{29} - 77.1538u^{28} + \cdots + 130.308u - 74.3077 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -11.2448u^{29} + 33.5315u^{28} + \cdots - 296.245u + 97.6084 \\ 21.6923u^{29} - 63.8462u^{28} + \cdots + 601.692u - 187.692 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 27.0629u^{29} - 88.6224u^{28} + \cdots + 448.063u - 156.699 \\ -12.5385u^{29} + 34.7692u^{28} + \cdots - 371.538u + 113.538 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -28.1678u^{29} + 95.9930u^{28} + \cdots - 426.168u + 161.531 \\ 33.4615u^{29} - 116.231u^{28} + \cdots + 484.462u - 183.462 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{697}{13}u^{29} - \frac{2097}{13}u^{28} + \cdots + \frac{18078}{13}u - \frac{5897}{13}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^{30} + 4u^{29} + \cdots + 5u - 1$
c_2	$u^{30} + 17u^{29} + \cdots - 21u - 11$
c_4, c_{10}	$u^{30} - 6u^{28} + \cdots - 3u - 1$
c_5, c_9	$u^{30} - u^{29} + \cdots - 4u + 1$
c_6, c_7, c_8 c_{11}, c_{12}	$u^{30} + 5u^{29} + \cdots + 38u + 11$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^{30} + 28y^{28} + \cdots - 93y + 1$
c_2	$y^{30} - 3y^{29} + \cdots - 1739y + 121$
c_4, c_{10}	$y^{30} - 12y^{29} + \cdots - 33y + 1$
c_5, c_9	$y^{30} - 19y^{29} + \cdots - 38y + 1$
c_6, c_7, c_8 c_{11}, c_{12}	$y^{30} - 43y^{29} + \cdots - 1180y + 121$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.01658$ $a = 2.92862$ $b = -1.50043$	1.74384	5.98900
$u = -0.878022 + 0.002899I$ $a = 0.238285 + 0.304913I$ $b = -0.559876 - 0.690935I$	$1.314950 - 0.451834I$	$6.61404 + 1.58489I$
$u = -0.878022 - 0.002899I$ $a = 0.238285 - 0.304913I$ $b = -0.559876 + 0.690935I$	$1.314950 + 0.451834I$	$6.61404 - 1.58489I$
$u = -1.130260 + 0.186589I$ $a = -1.246950 - 0.354613I$ $b = 0.627496 - 0.880698I$	$3.04303 - 4.92292I$	$3.35262 + 6.51542I$
$u = -1.130260 - 0.186589I$ $a = -1.246950 + 0.354613I$ $b = 0.627496 + 0.880698I$	$3.04303 + 4.92292I$	$3.35262 - 6.51542I$
$u = 1.18652$ $a = -1.61412$ $b = 1.01453$	6.25305	14.0800
$u = 0.313981 + 0.719655I$ $a = -0.258210 - 0.371938I$ $b = -0.865351 + 0.635662I$	$0.07877 - 5.69968I$	$6.25097 + 7.15473I$
$u = 0.313981 - 0.719655I$ $a = -0.258210 + 0.371938I$ $b = -0.865351 - 0.635662I$	$0.07877 + 5.69968I$	$6.25097 - 7.15473I$
$u = 0.439811 + 0.644843I$ $a = -0.712132 + 0.794843I$ $b = 1.079900 + 0.783683I$	$0.48551 + 10.07530I$	$5.95949 - 9.67797I$
$u = 0.439811 - 0.644843I$ $a = -0.712132 - 0.794843I$ $b = 1.079900 - 0.783683I$	$0.48551 - 10.07530I$	$5.95949 + 9.67797I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.174900+0.352174I$ $a=1.84786+0.33394I$ $b=-1.28819+0.84300I$	$5.5646-13.4956I$	$9.26736+8.87328I$
$u=-1.174900-0.352174I$ $a=1.84786-0.33394I$ $b=-1.28819-0.84300I$	$5.5646+13.4956I$	$9.26736-8.87328I$
$u=-1.198660+0.506727I$ $a=-0.495699-0.735221I$ $b=0.712841+0.295117I$	$4.63959+1.45693I$	$20.4781-6.0794I$
$u=-1.198660-0.506727I$ $a=-0.495699+0.735221I$ $b=0.712841-0.295117I$	$4.63959-1.45693I$	$20.4781+6.0794I$
$u=-1.32795$ $a=-0.917911$ $b=0.203761$	3.16863	1.59560
$u=0.360310+0.392975I$ $a=0.55572-1.55779I$ $b=-0.494454-0.710271I$	$-1.69300+2.96011I$	$-0.46924-8.93785I$
$u=0.360310-0.392975I$ $a=0.55572+1.55779I$ $b=-0.494454+0.710271I$	$-1.69300-2.96011I$	$-0.46924+8.93785I$
$u=-0.481507$ $a=0.778558$ $b=-0.569296$	0.855934	11.6870
$u=0.270687+0.323054I$ $a=1.45188-0.61952I$ $b=0.413056-0.459484I$	$-1.90583-0.45249I$	$-1.79458-1.14821I$
$u=0.270687-0.323054I$ $a=1.45188+0.61952I$ $b=0.413056+0.459484I$	$-1.90583+0.45249I$	$-1.79458+1.14821I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.70982 + 0.01754I$ $a = -0.504443 - 0.628284I$ $b = 0.562401 + 1.059590I$	$10.64730 - 0.25494I$	0
$u = 1.70982 - 0.01754I$ $a = -0.504443 + 0.628284I$ $b = 0.562401 - 1.059590I$	$10.64730 + 0.25494I$	0
$u = -1.73772$ $a = -2.71628$ $b = 1.72980$	11.7131	0
$u = 1.76484 + 0.04602I$ $a = 1.241500 + 0.064835I$ $b = -0.701863 - 0.995930I$	$13.5460 + 5.9087I$	0
$u = 1.76484 - 0.04602I$ $a = 1.241500 - 0.064835I$ $b = -0.701863 + 0.995930I$	$13.5460 - 5.9087I$	0
$u = 1.77253 + 0.09377I$ $a = -2.08526 - 0.07253I$ $b = 1.43463 + 0.88148I$	$16.1500 + 15.4410I$	0
$u = 1.77253 - 0.09377I$ $a = -2.08526 + 0.07253I$ $b = 1.43463 - 0.88148I$	$16.1500 - 15.4410I$	0
$u = -1.77800$ $a = 1.81911$ $b = -1.19344$	17.0939	0
$u = 1.81090 + 0.09745I$ $a = 1.055730 - 0.361250I$ $b = -0.763050 - 0.096600I$	$15.7188 + 1.2036I$	0
$u = 1.81090 - 0.09745I$ $a = 1.055730 + 0.361250I$ $b = -0.763050 + 0.096600I$	$15.7188 - 1.2036I$	0

II. $I_2^u = \langle -269u^{22}a + 526u^{22} + \cdots - 286a - 712,\ 2u^{22}a + 3u^{22} + \cdots - 7a - 6,\ u^{23} + 2u^{22} + \cdots - 2u + 1\rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^3 + 2u \\ u^5 - 3u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} a \\ 0.651332au^{22} - 1.27361u^{22} + \cdots + 0.692494a + 1.72397 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -2.45521au^{22} + 1.61501u^{22} + \cdots - 0.707022a + 0.806295 \\ 3.10654au^{22} - 2.88862u^{22} + \cdots + 2.39952a + 0.917676 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.273608au^{22} - 0.486683u^{22} + \cdots - 1.72397a - 0.0750605 \\ 0.00726392au^{22} + 2.23487u^{22} + \cdots - 0.222760a - 1.86925 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -1.01453au^{22} + 1.53027u^{22} + \cdots + 0.445521a + 1.73850 \\ 1.44068au^{22} - 4.08475u^{22} + \cdots + 1.15254a + 0.932203 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.806295au^{22} - 3.92978u^{22} + \cdots + 1.27361a - 2.48668 \\ -0.806295au^{22} + 4.92978u^{22} + \cdots - 1.27361a + 0.486683 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= u^{22} - 10u^{21} - 25u^{20} + 139u^{19} + 224u^{18} - 798u^{17} - 1029u^{16} + 2424u^{15} + 2796u^{14} - 4094u^{13} - 4866u^{12} + 3507u^{11} + 5634u^{10} - 630u^9 - 4167u^8 - 1372u^7 + 1603u^6 + 1148u^5 - 81u^4 - 337u^3 - 100u^2 + 12u + 27$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^{46} - 5u^{45} + \cdots + 602u - 47$
c_2	$(u^{23} - 11u^{22} + \cdots + 14u - 4)^2$
c_4, c_{10}	$u^{46} - 8u^{44} + \cdots + 2009u + 851$
c_5, c_9	$u^{46} + 2u^{44} + \cdots - u - 1$
c_6, c_7, c_8 c_{11}, c_{12}	$(u^{23} - 2u^{22} + \cdots - 2u - 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^{46} + 23y^{45} + \cdots - 6896y + 2209$
c_2	$(y^{23} - 5y^{22} + \cdots + 268y - 16)^2$
c_4, c_{10}	$y^{46} - 16y^{45} + \cdots - 19209411y + 724201$
c_5, c_9	$y^{46} + 4y^{45} + \cdots - 35y + 1$
c_6, c_7, c_8 c_{11}, c_{12}	$(y^{23} - 32y^{22} + \cdots + 18y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.999683 + 0.186821I$ $a = -0.042700 - 1.410890I$ $b = -0.18371 + 1.64920I$	$2.50463 + 5.52558I$	$5.10396 - 8.15770I$
$u = 0.999683 + 0.186821I$ $a = 1.68330 - 1.01369I$ $b = -0.995212 - 0.632466I$	$2.50463 + 5.52558I$	$5.10396 - 8.15770I$
$u = 0.999683 - 0.186821I$ $a = -0.042700 + 1.410890I$ $b = -0.18371 - 1.64920I$	$2.50463 - 5.52558I$	$5.10396 + 8.15770I$
$u = 0.999683 - 0.186821I$ $a = 1.68330 + 1.01369I$ $b = -0.995212 + 0.632466I$	$2.50463 - 5.52558I$	$5.10396 + 8.15770I$
$u = -1.105860 + 0.055480I$ $a = -1.92578 + 0.18458I$ $b = 1.35825 - 1.09576I$	$5.84113 - 4.35667I$	$13.8335 + 5.4983I$
$u = -1.105860 + 0.055480I$ $a = 1.60049 - 1.41054I$ $b = -0.614170 - 0.043824I$	$5.84113 - 4.35667I$	$13.8335 + 5.4983I$
$u = -1.105860 - 0.055480I$ $a = -1.92578 - 0.18458I$ $b = 1.35825 + 1.09576I$	$5.84113 + 4.35667I$	$13.8335 - 5.4983I$
$u = -1.105860 - 0.055480I$ $a = 1.60049 + 1.41054I$ $b = -0.614170 + 0.043824I$	$5.84113 + 4.35667I$	$13.8335 - 5.4983I$
$u = 1.18981$ $a = -1.50802$ $b = 1.05229$	6.25240	14.1390
$u = 1.18981$ $a = -1.73509$ $b = 0.992937$	6.25240	14.1390

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.140950 + 0.349828I$ $a = 0.851056 - 0.861201I$ $b = -0.901717 - 0.147878I$	$7.12094 + 5.39909I$	$13.5404 - 6.0968I$
$u = 1.140950 + 0.349828I$ $a = -1.70952 + 0.17931I$ $b = 1.30005 + 0.76522I$	$7.12094 + 5.39909I$	$13.5404 - 6.0968I$
$u = 1.140950 - 0.349828I$ $a = 0.851056 + 0.861201I$ $b = -0.901717 + 0.147878I$	$7.12094 - 5.39909I$	$13.5404 + 6.0968I$
$u = 1.140950 - 0.349828I$ $a = -1.70952 - 0.17931I$ $b = 1.30005 - 0.76522I$	$7.12094 - 5.39909I$	$13.5404 + 6.0968I$
$u = -0.377702 + 0.629512I$ $a = 0.209564 - 0.786199I$ $b = 0.780693 + 0.190315I$	$2.35417 - 2.04864I$	$12.02442 + 4.27551I$
$u = -0.377702 + 0.629512I$ $a = 0.341684 + 0.460205I$ $b = -0.932101 + 0.597740I$	$2.35417 - 2.04864I$	$12.02442 + 4.27551I$
$u = -0.377702 - 0.629512I$ $a = 0.209564 + 0.786199I$ $b = 0.780693 - 0.190315I$	$2.35417 + 2.04864I$	$12.02442 - 4.27551I$
$u = -0.377702 - 0.629512I$ $a = 0.341684 - 0.460205I$ $b = -0.932101 - 0.597740I$	$2.35417 + 2.04864I$	$12.02442 - 4.27551I$
$u = -0.580448 + 0.322591I$ $a = -0.345114 + 0.640960I$ $b = -0.861693 - 0.321506I$	$0.229739 + 0.719364I$	$7.70501 - 1.54064I$
$u = -0.580448 + 0.322591I$ $a = 2.10527 + 0.09680I$ $b = -0.966346 + 0.634688I$	$0.229739 + 0.719364I$	$7.70501 - 1.54064I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.580448 - 0.322591I$ $a = -0.345114 - 0.640960I$ $b = -0.861693 + 0.321506I$	$0.229739 - 0.719364I$	$7.70501 + 1.54064I$
$u = -0.580448 - 0.322591I$ $a = 2.10527 - 0.09680I$ $b = -0.966346 - 0.634688I$	$0.229739 - 0.719364I$	$7.70501 + 1.54064I$
$u = -0.157596 + 0.449298I$ $a = 0.51417 - 1.77331I$ $b = 0.893978 - 0.534579I$	$-1.03877 - 3.41304I$	$-1.13516 + 7.69580I$
$u = -0.157596 + 0.449298I$ $a = -0.0565579 + 0.1078630I$ $b = 0.545955 + 1.142730I$	$-1.03877 - 3.41304I$	$-1.13516 + 7.69580I$
$u = -0.157596 - 0.449298I$ $a = 0.51417 + 1.77331I$ $b = 0.893978 + 0.534579I$	$-1.03877 + 3.41304I$	$-1.13516 - 7.69580I$
$u = -0.157596 - 0.449298I$ $a = -0.0565579 - 0.1078630I$ $b = 0.545955 - 1.142730I$	$-1.03877 + 3.41304I$	$-1.13516 - 7.69580I$
$u = 1.59673$ $a = -0.0933260$ $b = 0.587557$	7.42882	28.8540
$u = 1.59673$ $a = -2.54753$ $b = 1.94206$	7.42882	28.8540
$u = 0.313095 + 0.086295I$ $a = 1.18015 - 2.03047I$ $b = -0.959828 - 0.907570I$	$1.29868 + 3.82978I$	$14.5236 - 8.4853I$
$u = 0.313095 + 0.086295I$ $a = -2.82861 - 3.70039I$ $b = 0.569721 + 0.399803I$	$1.29868 + 3.82978I$	$14.5236 - 8.4853I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.313095 - 0.086295I$ $a = 1.18015 + 2.03047I$ $b = -0.959828 + 0.907570I$	$1.29868 - 3.82978I$	$14.5236 + 8.4853I$
$u = 0.313095 - 0.086295I$ $a = -2.82861 + 3.70039I$ $b = 0.569721 - 0.399803I$	$1.29868 - 3.82978I$	$14.5236 + 8.4853I$
$u = -1.73349 + 0.04283I$ $a = -0.05422 - 1.72140I$ $b = 0.12177 + 1.99221I$	$12.35220 - 6.42236I$	$6.09016 + 6.34054I$
$u = -1.73349 + 0.04283I$ $a = -1.78344 - 0.36813I$ $b = 1.091730 - 0.703323I$	$12.35220 - 6.42236I$	$6.09016 + 6.34054I$
$u = -1.73349 - 0.04283I$ $a = -0.05422 + 1.72140I$ $b = 0.12177 - 1.99221I$	$12.35220 + 6.42236I$	$6.09016 - 6.34054I$
$u = -1.73349 - 0.04283I$ $a = -1.78344 + 0.36813I$ $b = 1.091730 + 0.703323I$	$12.35220 + 6.42236I$	$6.09016 - 6.34054I$
$u = 1.75724 + 0.01445I$ $a = -1.45201 - 0.83740I$ $b = 0.696220 - 0.251137I$	$16.2384 + 4.6560I$	$13.26850 - 4.63684I$
$u = 1.75724 + 0.01445I$ $a = 2.07313 + 0.57426I$ $b = -1.57300 - 1.18808I$	$16.2384 + 4.6560I$	$13.26850 - 4.63684I$
$u = 1.75724 - 0.01445I$ $a = -1.45201 + 0.83740I$ $b = 0.696220 + 0.251137I$	$16.2384 - 4.6560I$	$13.26850 + 4.63684I$
$u = 1.75724 - 0.01445I$ $a = 2.07313 - 0.57426I$ $b = -1.57300 + 1.18808I$	$16.2384 - 4.6560I$	$13.26850 + 4.63684I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.76372+0.09254I$ $a=-1.227110-0.467441I$ $b=\ \ 1.007300-0.351627I$	$17.5310-7.2981I$	$12.96470+5.26666I$
$u=-1.76372+0.09254I$ $a=\ \ 2.09962-0.18292I$ $b=-1.54996+0.81454I$	$17.5310-7.2981I$	$12.96470+5.26666I$
$u=-1.76372-0.09254I$ $a=-1.227110+0.467441I$ $b=\ \ 1.007300+0.351627I$	$17.5310+7.2981I$	$12.96470-5.26666I$
$u=-1.76372-0.09254I$ $a=\ \ 2.09962+0.18292I$ $b=-1.54996-0.81454I$	$17.5310+7.2981I$	$12.96470-5.26666I$
$u=-1.77086$ $a=\ \ 1.70862+0.14562I$ $b=-1.115350+0.221258I$	17.0133	14.1690
$u=-1.77086$ $a=\ \ 1.70862-0.14562I$ $b=-1.115350-0.221258I$	17.0133	14.1690

III. $\boldsymbol{I_3^u = \langle u^8 - u^7 + \cdots + b + 2u,\ -u^2 + a + 2,\ u^9 - 2u^8 + \cdots - u + 1\rangle}$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^3 + 2u \\ u^5 - 3u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^2 - 2 \\ -u^8 + u^7 + 5u^6 - 5u^5 - 7u^4 + 6u^3 + 4u^2 - 2u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 2u^8 - u^7 - 10u^6 + 5u^5 + 13u^4 - 5u^3 - 4u^2 - 3 \\ -3u^8 + 2u^7 + 15u^6 - 10u^5 - 20u^4 + 11u^3 + 9u^2 - 2u + 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^7 + 5u^5 - 7u^3 - u^2 + 4u + 2 \\ u^8 - 6u^6 + u^5 + 11u^4 - 4u^3 - 6u^2 + 3u - 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^8 - u^7 - 5u^6 + 5u^5 + 6u^4 - 6u^3 + u - 3 \\ -u^8 + u^7 + 5u^6 - 5u^5 - 7u^4 + 6u^3 + 4u^2 - u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^8 - u^7 - 5u^6 + 6u^5 + 7u^4 - 10u^3 - 4u^2 + 6u \\ -u^8 + 5u^6 - 7u^4 - u^3 + 4u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5u^8 + 32u^6 - 6u^5 - 64u^4 + 25u^3 + 41u^2 - 21u + 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^9 - u^8 + 5u^7 + 6u^5 + 6u^4 + 4u^3 + 5u^2 + 2u + 1$
c_2	$u^9 + 8u^8 + \cdots + 114u + 29$
c_4, c_{10}	$u^9 + u^8 + u^7 + 2u^5 + 2u^4 - u^2 + 1$
c_5, c_9	$u^9 - u^7 + 2u^5 - 2u^4 - u^2 + u - 1$
c_6, c_7, c_8	$u^9 + 2u^8 - 5u^7 - 11u^6 + 6u^5 + 17u^4 - u^3 - 8u^2 - u - 1$
c_{11}, c_{12}	$u^9 - 2u^8 - 5u^7 + 11u^6 + 6u^5 - 17u^4 - u^3 + 8u^2 - u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^9 + 9y^8 + 37y^7 + 80y^6 + 90y^5 + 34y^4 - 20y^3 - 21y^2 - 6y - 1$
c_2	$y^9 + 2y^8 - 5y^7 - 25y^6 - 15y^5 - 19y^4 - 13y^3 - 214y^2 - 112y - 841$
c_4, c_{10}	$y^9 + y^8 + 5y^7 + 6y^5 - 6y^4 + 4y^3 - 5y^2 + 2y - 1$
c_5, c_9	$y^9 - 2y^8 + 5y^7 - 4y^6 + 6y^5 - 6y^4 - 5y^2 - y - 1$
c_6, c_7, c_8 c_{11}, c_{12}	$y^9 - 14y^8 + \cdots - 15y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.058740+0.157360I$ $a=-0.903839-0.333206I$ $b=\ \ 0.697506-0.952517I$	$4.19323-5.25554I$	$11.10227+7.96200I$
$u=-1.058740-0.157360I$ $a=-0.903839+0.333206I$ $b=\ \ 0.697506+0.952517I$	$4.19323+5.25554I$	$11.10227-7.96200I$
$u=\ \ 1.180180+0.330999I$ $a=-0.716747+0.781273I$ $b=\ \ 0.620761-0.367622I$	$4.16417-1.30911I$	$4.70320+1.63386I$
$u=\ \ 1.180180-0.330999I$ $a=-0.716747-0.781273I$ $b=\ \ 0.620761+0.367622I$	$4.16417+1.30911I$	$4.70320-1.63386I$
$u=\ \ 0.035682+0.320509I$ $a=-2.10145+0.02287I$ $b=-0.625202-0.718766I$	$0.54144+3.69294I$	$2.15237-6.28351I$
$u=\ \ 0.035682-0.320509I$ $a=-2.10145-0.02287I$ $b=-0.625202+0.718766I$	$0.54144-3.69294I$	$2.15237+6.28351I$
$u=\ \ 1.75217+0.04113I$ $a=\ \ 1.068410+0.144146I$ $b=-0.752703-1.076140I$	$14.3916+6.0909I$	$12.47244-6.62825I$
$u=\ \ 1.75217-0.04113I$ $a=\ \ 1.068410-0.144146I$ $b=-0.752703+1.076140I$	$14.3916-6.0909I$	$12.47244+6.62825I$
$u=-1.81858$ $a=\ \ 1.30725$ $b=-0.880724$	15.9267	10.1390

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 7u - 2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$(y-1)^4$
c_2	y^4
c_4, c_5, c_9 c_{10}	$y^4 - 7y^3 + 13y^2 - 7y + 1$
c_6, c_7, c_8 c_{11}, c_{12}	$(y^2 - 3y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 0.880394$ $b = 0.737640$	-0.657974	2.32620
$u = 0.618034$ $a = 2.97371$ $b = -1.35567$	-0.657974	2.32620
$u = -1.61803$ $a = -0.140774$ $b = -0.477260$	7.23771	-13.3260
$u = -1.61803$ $a = -2.71333$ $b = 2.09529$	7.23771	-13.3260

V. $\boldsymbol{I_1^v = \langle a,\ b-1,\ v+1\rangle}$

(i) Arc colorings

$a_7 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$

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

$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_8 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$

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

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

$a_3 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_6 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$

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

$a_{10} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = 1.00000$	-1.64493	-6.00000

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_3	$(u-1)^4(u+1)(u^9-u^8+5u^7+6u^5+6u^4+4u^3+5u^2+2u+1)$ $\cdot(u^{30}+4u^{29}+\cdots+5u-1)(u^{46}-5u^{45}+\cdots+602u-47)$
c_2	$u^5(u^9+8u^8+\cdots+114u+29)(u^{23}-11u^{22}+\cdots+14u-4)^2$ $\cdot(u^{30}+17u^{29}+\cdots-21u-11)$
c_4, c_{10}	$(u+1)(u^4-u^3-3u^2+u+1)(u^9+u^8+u^7+2u^5+2u^4-u^2+1)$ $\cdot(u^{30}-6u^{28}+\cdots-3u-1)(u^{46}-8u^{44}+\cdots+2009u+851)$
c_5, c_9	$(u+1)(u^4-u^3-3u^2+u+1)(u^9-u^7+2u^5-2u^4-u^2+u-1)$ $\cdot(u^{30}-u^{29}+\cdots-4u+1)(u^{46}+2u^{44}+\cdots-u-1)$
c_6, c_7, c_8	$u(u^2-u-1)^2(u^9+2u^8+\cdots-u-1)$ $\cdot((u^{23}-2u^{22}+\cdots-2u-1)^2)(u^{30}+5u^{29}+\cdots+38u+11)$
c_{11}, c_{12}	$u(u^2+u-1)^2(u^9-2u^8+\cdots-u+1)$ $\cdot((u^{23}-2u^{22}+\cdots-2u-1)^2)(u^{30}+5u^{29}+\cdots+38u+11)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_3	$(y-1)^5$ $\cdot(y^9+9y^8+37y^7+80y^6+90y^5+34y^4-20y^3-21y^2-6y-1)$ $\cdot(y^{30}+28y^{28}+\cdots-93y+1)(y^{46}+23y^{45}+\cdots-6896y+2209)$
c_2	$y^5(y^9+2y^8+\cdots-112y-841)$ $\cdot((y^{23}-5y^{22}+\cdots+268y-16)^2)(y^{30}-3y^{29}+\cdots-1739y+121)$
c_4, c_{10}	$(y-1)(y^4-7y^3+13y^2-7y+1)$ $\cdot(y^9+y^8+5y^7+6y^5-6y^4+4y^3-5y^2+2y-1)$ $\cdot(y^{30}-12y^{29}+\cdots-33y+1)$ $\cdot(y^{46}-16y^{45}+\cdots-19209411y+724201)$
c_5, c_9	$(y-1)(y^4-7y^3+13y^2-7y+1)$ $\cdot(y^9-2y^8+5y^7-4y^6+6y^5-6y^4-5y^2-y-1)$ $\cdot(y^{30}-19y^{29}+\cdots-38y+1)(y^{46}+4y^{45}+\cdots-35y+1)$
c_6, c_7, c_8 c_{11}, c_{12}	$y(y^2-3y+1)^2(y^9-14y^8+\cdots-15y-1)$ $\cdot((y^{23}-32y^{22}+\cdots+18y-1)^2)(y^{30}-43y^{29}+\cdots-1180y+121)$