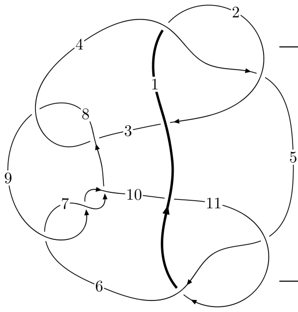
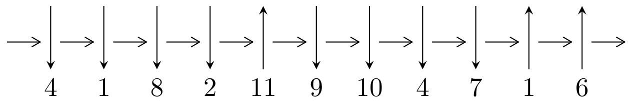
$11n_{78}$ $(K11n_{78})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -u^{10} - u^9 + 6u^8 + 5u^7 - 12u^6 - 5u^5 + 10u^4 - 4u^3 - 6u^2 + 2d + u + 1, \\
& u^8 + u^7 - 6u^6 - 4u^5 + 12u^4 + u^3 - 8u^2 + 2c + 8u - 1, \\
& -u^{10} - 2u^9 + 5u^8 + 12u^7 - 8u^6 - 23u^5 + 9u^4 + 16u^3 - 15u^2 + 4b - 3u + 2, \\
& -u^{10} - 2u^9 + 6u^8 + 12u^7 - 14u^6 - 21u^5 + 21u^4 + 5u^3 - 22u^2 + 2a + 10u, \\
& u^{11} + 2u^{10} - 6u^9 - 12u^8 + 13u^7 + 21u^6 - 17u^5 - 7u^4 + 18u^3 - 3u^2 - u - 1\rangle \\
I_2^u = \langle & -u^7 - 3u^6 + u^5 + 3u^4 - 5u^3 + 6u^2 + 4d + 7u - 2,\ u^7 + 7u^6 + 7u^5 - 7u^4 + u^3 + 2u^2 + 8c - 23u - 14, \\
& u^7 + 3u^6 - u^5 - 3u^4 + 5u^3 - 2u^2 + 4b - 7u - 2,\ 3u^7 + 7u^6 - u^5 - 3u^4 + 5u^3 - 8u^2 + 4a - 13u - 8, \\
& u^8 + u^7 - 3u^6 - u^5 + 3u^4 - 4u^3 - 3u^2 + 4u + 4\rangle \\
I_3^u = \langle & d + u - 1,\ c + 1,\ au + 2b - 1,\ a^2 - 2au - 4a - u,\ u^2 + u - 1\rangle \\
I_4^u = \langle & -u^3 + u^2 + d - u,\ u^3 + c + 1,\ b - u,\ a,\ u^4 - u^3 + 2u - 1\rangle \\
I_5^u = \langle & d + u - 1,\ c + 1,\ b - u,\ a,\ u^2 + u - 1\rangle \\
I_6^u = \langle & d + 1,\ c,\ b,\ a + 1,\ u - 1\rangle \\
I_7^u = \langle & d - 1,\ c,\ b - 1,\ a,\ u - 1\rangle \\
I_8^u = \langle & da - 1,\ c,\ b - 1,\ u - 1\rangle
\end{aligned}$$

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

* 8 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 32 representations.

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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`).

* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

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

I. $\boldsymbol{I_1^u = \langle -u^{10} - u^9 + \cdots + 2d + 1,\ u^8 + u^7 + \cdots + 2c - 1,\ -u^{10} - 2u^9 + \cdots + 4b + 2,\ -u^{10} - 2u^9 + \cdots + 2a + 10u,\ u^{11} + 2u^{10} + \cdots - u - 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{1}{2}u^8 - \frac{1}{2}u^7 + \cdots - 4u + \frac{1}{2} \\ \frac{1}{2}u^{10} + \frac{1}{2}u^9 + \cdots - \frac{1}{2}u - \frac{1}{2} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{2}u^8 - \frac{1}{2}u^7 + \cdots - 4u + \frac{1}{2} \\ -\frac{1}{2}u^7 + 2u^5 + \cdots - \frac{1}{2}u - \frac{1}{2} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{2}u^{10} + u^9 + \cdots + 11u^2 - 5u \\ \frac{1}{4}u^{10} + \frac{1}{2}u^9 + \cdots + \frac{3}{4}u - \frac{1}{2} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{1}{2}u^{10} - \frac{3}{4}u^9 + \cdots + \frac{19}{4}u + \frac{3}{4} \\ -\frac{1}{4}u^9 + \frac{5}{4}u^7 + \cdots + \frac{1}{4}u + \frac{3}{4} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{1}{2}u^{10} - \frac{1}{2}u^9 + \cdots - 7u^2 + \frac{9}{2}u \\ -\frac{1}{4}u^9 + \frac{5}{4}u^7 + \cdots + \frac{1}{4}u + \frac{3}{4} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{1}{2}u^{10} + \frac{1}{2}u^9 + \cdots + 7u^2 - \frac{9}{2}u \\ \frac{1}{4}u^{10} + \frac{1}{2}u^9 + \cdots + \frac{1}{4}u - \frac{1}{2} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{1}{2}u^{10} + \frac{1}{2}u^9 + \cdots + 7u^2 - \frac{9}{2}u \\ \frac{1}{4}u^{10} + \frac{1}{2}u^9 + \cdots + \frac{1}{4}u - \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -u^{10} - \frac{7}{2}u^9 + 4u^8 + \frac{45}{2}u^7 - u^6 - 47u^5 - \frac{3}{2}u^4 + \frac{71}{2}u^3 - 20u^2 - \frac{23}{2}u - \frac{1}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_6 c_7, c_9	$u^{11} - 2u^{10} + \cdots - u + 1$
c_2	$u^{11} + 16u^{10} + \cdots - 5u + 1$
c_3, c_8	$u^{11} - 2u^{10} - u^9 + 8u^8 - 11u^7 + 46u^5 - 76u^4 + 32u^3 + 12u^2 - 16u + 8$
c_5, c_{11}	$u^{11} + 2u^{10} + u^9 - 2u^8 + 5u^6 + 7u^5 - 6u^4 - 13u^3 - 3u^2 + 8u + 4$
c_{10}	$u^{11} - 2u^{10} + \cdots + 88u - 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6 c_7, c_9	$y^{11} - 16y^{10} + \cdots - 5y - 1$
c_2	$y^{11} - 36y^{10} + \cdots - 93y - 1$
c_3, c_8	$y^{11} - 6y^{10} + \cdots + 64y - 64$
c_5, c_{11}	$y^{11} - 2y^{10} + \cdots + 88y - 16$
c_{10}	$y^{11} + 14y^{10} + \cdots + 2336y - 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.552760 + 0.641799I$ $a = -0.712390 - 0.815288I$ $b = 0.792159 - 0.569904I$ $c = 0.940583 - 0.816704I$ $d = -0.608897 + 0.153639I$	$-0.79689 - 3.53286I$	$-6.46290 + 7.08687I$
$u = 0.552760 - 0.641799I$ $a = -0.712390 + 0.815288I$ $b = 0.792159 + 0.569904I$ $c = 0.940583 + 0.816704I$ $d = -0.608897 - 0.153639I$	$-0.79689 + 3.53286I$	$-6.46290 - 7.08687I$
$u = 0.590824$ $a = -0.0396568$ $b = 0.563771$ $c = -1.04963$ $d = 0.389828$	-0.987118	-9.97440
$u = 1.64391 + 0.11631I$ $a = -0.234439 + 1.284060I$ $b = -0.962808 + 0.959946I$ $c = 0.077846 - 1.022100I$ $d = -0.065433 + 0.634970I$	$-10.83450 - 3.51232I$	$-10.06687 + 2.29315I$
$u = 1.64391 - 0.11631I$ $a = -0.234439 - 1.284060I$ $b = -0.962808 - 0.959946I$ $c = 0.077846 + 1.022100I$ $d = -0.065433 - 0.634970I$	$-10.83450 + 3.51232I$	$-10.06687 - 2.29315I$
$u = -1.60901 + 0.41639I$ $a = -0.194428 + 1.371430I$ $b = 1.29448 + 0.81734I$ $c = -1.048640 + 0.270416I$ $d = 2.42888 + 0.22926I$	$-14.9243 + 12.3125I$	$-9.62929 - 5.75829I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.60901-0.41639I$ $a=-0.194428-1.371430I$ $b=\ \ 1.29448-0.81734I$ $c=-1.048640-0.270416I$ $d=\ \ 2.42888-0.22926I$	$-14.9243-12.3125I$	$-9.62929+5.75829I$
$u=-0.162723+0.277330I$ $a=\ \ 0.22673-2.50982I$ $b=-0.937916-0.171871I$ $c=\ \ 0.96637-1.53134I$ $d=-0.472206-0.461294I$	$1.66390+0.61823I$	$3.63835-1.22407I$
$u=-0.162723-0.277330I$ $a=\ \ 0.22673+2.50982I$ $b=-0.937916+0.171871I$ $c=\ \ 0.96637+1.53134I$ $d=-0.472206+0.461294I$	$1.66390-0.61823I$	$3.63835+1.22407I$
$u=-1.72035+0.28600I$ $a=\ \ 0.434360-0.920646I$ $b=\ \ 0.532201-1.268140I$ $c=\ \ 1.088660-0.174544I$ $d=-2.47725-0.13447I$	$-17.3830+4.9116I$	$-11.49209-1.65700I$
$u=-1.72035-0.28600I$ $a=\ \ 0.434360+0.920646I$ $b=\ \ 0.532201+1.268140I$ $c=\ \ 1.088660+0.174544I$ $d=-2.47725+0.13447I$	$-17.3830-4.9116I$	$-11.49209+1.65700I$

II. $I_2^u = \langle -u^7 - 3u^6 + \cdots + 4d - 2,\ u^7 + 7u^6 + \cdots + 8c - 14,\ u^7 + 3u^6 + \cdots + 4b - 2,\ 3u^7 + 7u^6 + \cdots + 4a - 8,\ u^8 + u^7 + \cdots + 4u + 4\rangle$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{8}u^7 - \frac{7}{8}u^6 + \cdots + \frac{23}{8}u + \frac{7}{4} \\ \frac{1}{4}u^7 + \frac{3}{4}u^6 + \cdots - \frac{7}{4}u + \frac{1}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{8}u^7 - \frac{7}{8}u^6 + \cdots + \frac{23}{8}u + \frac{7}{4} \\ -\frac{1}{4}u^7 - \frac{3}{4}u^6 + \cdots + \frac{7}{4}u + \frac{7}{2} \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -\frac{3}{4}u^7 - \frac{7}{4}u^6 + \cdots + \frac{13}{4}u + 2 \\ -\frac{1}{4}u^7 - \frac{3}{4}u^6 + \cdots + \frac{7}{4}u + \frac{1}{2} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} \frac{7}{8}u^7 + \frac{13}{8}u^6 + \cdots - \frac{33}{8}u - \frac{7}{4} \\ \frac{1}{2}u^7 + \frac{1}{2}u^6 + \cdots - 2u^2 - \frac{3}{2}u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{3}{8}u^7 + \frac{9}{8}u^6 + \cdots - \frac{21}{8}u - \frac{7}{4} \\ \frac{1}{2}u^7 + \frac{1}{2}u^6 + \cdots - 2u^2 - \frac{3}{2}u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{3}{8}u^7 - \frac{9}{8}u^6 + \cdots + \frac{21}{8}u + \frac{7}{4} \\ \frac{1}{2}u^7 + \frac{1}{2}u^6 + \cdots - \frac{1}{2}u + 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{3}{8}u^7 - \frac{9}{8}u^6 + \cdots + \frac{21}{8}u + \frac{7}{4} \\ \frac{1}{2}u^7 + \frac{1}{2}u^6 + \cdots - \frac{1}{2}u + 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7 - 6u^6 + 4u^5 - 6u^3 + 14u^2 + 14u - 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_6 c_7, c_9	$u^8 - u^7 - 3u^6 + u^5 + 3u^4 + 4u^3 - 3u^2 - 4u + 4$
c_2	$u^8 + 7u^7 + 17u^6 + 17u^5 + 19u^4 + 50u^3 + 65u^2 + 40u + 16$
c_3, c_8	$(u^4 + 3u^3 + 3u^2 + 2u + 2)^2$
c_5, c_{11}	$(u^4 + u^3 - u + 1)^2$
c_{10}	$(u^4 - u^3 + 4u^2 - u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6 c_7, c_9	$y^8 - 7y^7 + 17y^6 - 17y^5 + 19y^4 - 50y^3 + 65y^2 - 40y + 16$
c_2	$y^8 - 15y^7 + 89y^6 - 213y^5 + 343y^4 - 846y^3 + 833y^2 + 480y + 256$
c_3, c_8	$(y^4 - 3y^3 + y^2 + 8y + 4)^2$
c_5, c_{11}	$(y^4 - y^3 + 4y^2 - y + 1)^2$
c_{10}	$(y^4 + 7y^3 + 16y^2 + 7y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.695289 + 0.428533I$ $a = 0.542307 - 0.680462I$ $b = -0.566121 - 0.458821I$ $c = -0.623998 + 0.858133I$ $d = 1.26633 + 1.05473I$	$-2.62917 + 1.45022I$	$-7.43990 - 4.72374I$
$u = -0.695289 - 0.428533I$ $a = 0.542307 + 0.680462I$ $b = -0.566121 + 0.458821I$ $c = -0.623998 - 0.858133I$ $d = 1.26633 - 1.05473I$	$-2.62917 - 1.45022I$	$-7.43990 + 4.72374I$
$u = 0.529919 + 1.081980I$ $a = -0.865083 - 0.577452I$ $b = 1.066120 - 0.864054I$ $c = -0.913781 + 0.999915I$ $d = 0.823753 - 0.282672I$	$-8.06290 - 6.78371I$	$-8.56010 + 4.72374I$
$u = 0.529919 - 1.081980I$ $a = -0.865083 + 0.577452I$ $b = 1.066120 + 0.864054I$ $c = -0.913781 - 0.999915I$ $d = 0.823753 + 0.282672I$	$-8.06290 + 6.78371I$	$-8.56010 - 4.72374I$
$u = 1.261410 + 0.030288I$ $a = -1.29231 - 1.30385I$ $b = -0.566121 - 0.458821I$ $c = 0.035950 - 0.685854I$ $d = -0.024117 + 0.382409I$	$-2.62917 + 1.45022I$	$-7.43990 - 4.72374I$
$u = 1.261410 - 0.030288I$ $a = -1.29231 + 1.30385I$ $b = -0.566121 + 0.458821I$ $c = 0.035950 + 0.685854I$ $d = -0.024117 - 0.382409I$	$-2.62917 - 1.45022I$	$-7.43990 + 4.72374I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.59604 + 0.21793I$ $a = 0.115083 + 1.406860I$ $b = 1.066120 + 0.864054I$ $c = 1.001830 - 0.150682I$ $d = -2.56597 - 0.16841I$	$-8.06290 + 6.78371I$	$-8.56010 - 4.72374I$
$u = -1.59604 - 0.21793I$ $a = 0.115083 - 1.406860I$ $b = 1.066120 - 0.864054I$ $c = 1.001830 + 0.150682I$ $d = -2.56597 + 0.16841I$	$-8.06290 - 6.78371I$	$-8.56010 + 4.72374I$

III. $\boldsymbol{I_3^u = \langle d+u-1,\ c+1,\ au+2b-1,\ a^2-2au-4a-u,\ u^2+u-1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = -0.115487$ $b = 0.535687$ $c = -1.00000$ $d = 0.381966$	-0.986960	-10.0000
$u = 0.618034$ $a = 5.35155$ $b = -1.15372$ $c = -1.00000$ $d = 0.381966$	-0.986960	-10.0000
$u = -1.61803$ $a = 0.381966 + 1.213320I$ $b = 0.809017 + 0.981593I$ $c = -1.00000$ $d = 2.61803$	-8.88264	-10.0000
$u = -1.61803$ $a = 0.381966 - 1.213320I$ $b = 0.809017 - 0.981593I$ $c = -1.00000$ $d = 2.61803$	-8.88264	-10.0000

IV. $\boldsymbol{I^u_4 = \langle -u^3 + u^2 + d - u,\ u^3 + c + 1,\ b - u,\ a,\ u^4 - u^3 + 2u - 1 \rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.15372$ $a = 0$ $b = -1.15372$ $c = 0.535687$ $d = -4.02048$	-0.986960	-10.0000
$u = 0.809017 + 0.981593I$ $a = 0$ $b = 0.809017 + 0.981593I$ $c = 0.809017 - 0.981593I$ $d = -0.690983 + 0.374935I$	-8.88264	-10.0000
$u = 0.809017 - 0.981593I$ $a = 0$ $b = 0.809017 - 0.981593I$ $c = 0.809017 + 0.981593I$ $d = -0.690983 - 0.374935I$	-8.88264	-10.0000
$u = 0.535687$ $a = 0$ $b = 0.535687$ $c = -1.15372$ $d = 0.402448$	-0.986960	-10.0000

V. $I_5^u = \langle d+u-1,\ c+1,\ b-u,\ a,\ u^2+u-1\rangle$

(i) Arc colorings

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

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

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

$$a_8 = \begin{pmatrix}-1\\-u+1\end{pmatrix}$$

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

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

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

$$a_{11} = \begin{pmatrix}1\\-u+1\end{pmatrix}$$

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

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 0$ $b = 0.618034$ $c = -1.00000$ $d = 0.381966$	-0.986960	-10.0000
$u = -1.61803$ $a = 0$ $b = -1.61803$ $c = -1.00000$ $d = 2.61803$	-8.88264	-10.0000

VI. $I_6^u = \langle d+1,\ c,\ b,\ a+1,\ u-1 \rangle$

(i) Arc colorings

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

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

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

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

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

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

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

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

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$		
$a = -1.00000$		
$b = 0$	-3.28987	-12.0000
$c = 0$		
$d = -1.00000$		

VII. $I_7^u = \langle d-1,\ c,\ b-1,\ a,\ u-1 \rangle$

(i) Arc colorings

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

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

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

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

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

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

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

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

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

$$a_{10} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u		$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	0		
$b =$	1.00000	0	0
$c =$	0		
$d =$	1.00000		

VIII. $I_8^u = \langle da - 1,\ c,\ b - 1,\ u - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= d^2 + a^2 - 8$

(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_8^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=\cdots$ $a=\cdots$ $b=\cdots$ $c=\cdots$ $d=\cdots$	-1.64493	$-5.90156-0.11931I$

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

$$a_{10} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_3 c_4, c_8	u
c_5, c_6, c_7	$u-1$
c_9, c_{10}, 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_8	y
c_5, c_6, c_7 c_9, c_{10}, c_{11}	$y - 1$

(vi) Complex Volumes and Cusp Shapes

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

X. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_6, c_7	$u(u-1)^2(u^2-u-1)^3(u^4+u^3-2u-1)$ $\cdot(u^8-u^7+\cdots-4u+4)(u^{11}-2u^{10}+\cdots-u+1)$
c_2	$u(u+1)^2(u^2+3u+1)^3(u^4+u^3+2u^2+4u+1)$ $\cdot(u^8+7u^7+17u^6+17u^5+19u^4+50u^3+65u^2+40u+16)$ $\cdot(u^{11}+16u^{10}+\cdots-5u+1)$
c_3, c_8	$u^3(u^2-u-1)^5(u^4+3u^3+3u^2+2u+2)^2$ $\cdot(u^{11}-2u^{10}-u^9+8u^8-11u^7+46u^5-76u^4+32u^3+12u^2-16u+8)$
c_4, c_9	$u(u+1)^2(u^2-u-1)^3(u^4+u^3-2u-1)$ $\cdot(u^8-u^7+\cdots-4u+4)(u^{11}-2u^{10}+\cdots-u+1)$
c_5, c_{11}	$u(u-1)(u+1)(u^2-u-1)(u^4+u^3-2u-1)^2(u^4+u^3-u+1)^2$ $\cdot(u^{11}+2u^{10}+u^9-2u^8+5u^6+7u^5-6u^4-13u^3-3u^2+8u+4)$
c_{10}	$u(u+1)^2(u^2-3u+1)(u^4-u^3+2u^2-4u+1)^2$ $\cdot((u^4-u^3+4u^2-u+1)^2)(u^{11}-2u^{10}+\cdots+88u-16)$

XI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6 c_7, c_9	$y(y-1)^2(y^2-3y+1)^3(y^4-y^3+2y^2-4y+1)$ $\cdot(y^8-7y^7+17y^6-17y^5+19y^4-50y^3+65y^2-40y+16)$ $\cdot(y^{11}-16y^{10}+\cdots-5y-1)$
c_2	$y(y-1)^2(y^2-7y+1)^3(y^4+3y^3-2y^2-12y+1)$ $\cdot(y^8-15y^7+89y^6-213y^5+343y^4-846y^3+833y^2+480y+256)$ $\cdot(y^{11}-36y^{10}+\cdots-93y-1)$
c_3, c_8	$y^3(y^2-3y+1)^5(y^4-3y^3+y^2+8y+4)^2$ $\cdot(y^{11}-6y^{10}+\cdots+64y-64)$
c_5, c_{11}	$y(y-1)^2(y^2-3y+1)(y^4-y^3+2y^2-4y+1)^2$ $\cdot((y^4-y^3+4y^2-y+1)^2)(y^{11}-2y^{10}+\cdots+88y-16)$
c_{10}	$y(y-1)^2(y^2-7y+1)(y^4+3y^3-2y^2-12y+1)^2$ $\cdot((y^4+7y^3+16y^2+7y+1)^2)(y^{11}+14y^{10}+\cdots+2336y-256)$