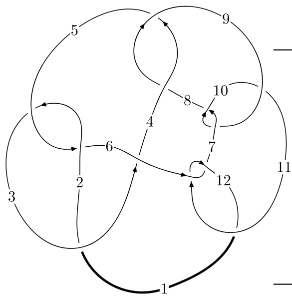
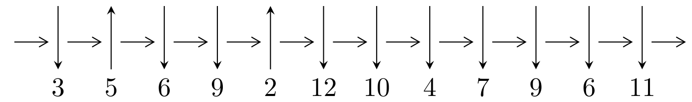
$12n_{0059}$ ($K12n_{0059}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -u^{11} + 5u^{10} - 14u^9 + 25u^8 - 36u^7 + 34u^6 - 22u^5 - 2u^4 - 3u^3 + u^2 + 16d - 20u + 1, \\
& - u^{11} + 5u^{10} - 14u^9 + 25u^8 - 36u^7 + 34u^6 - 22u^5 - 2u^4 - 3u^3 + u^2 + 16c - 36u + 1, \\
& - 4u^{12} + 19u^{11} - 47u^{10} + 68u^9 - 73u^8 + 26u^7 + 46u^6 - 108u^5 + 22u^4 + 27u^3 - 111u^2 + 16b - 48u + 7, \\
& - 11u^{12} + 51u^{11} + \cdots + 16a + 2, \\
& u^{13} - 5u^{12} + 13u^{11} - 20u^{10} + 22u^9 - 9u^8 - 14u^7 + 36u^6 - 19u^5 - 3u^4 + 33u^3 - 4u + 1\rangle \\
I_2^u = \langle & -953u^9 + 3087u^8 + \cdots + 16432d + 4012, \\
& u^9 - 3u^8 + 5u^7 + 3u^6 - 12u^5 + 10u^4 + 17u^3 - 18u^2 + 16c - 23u + 8, \\
& 1173u^9 - 2403u^8 + \cdots + 32864b - 14956,\ -5403u^9 + 34813u^8 + \cdots + 131456a - 281772, \\
& u^{10} - 3u^9 + 5u^8 + 3u^7 - 12u^6 + 10u^5 + 17u^4 - 18u^3 - 23u^2 + 8u + 16\rangle \\
I_3^u = \langle & d - 1,\ c - 1,\ 2b - a - 1,\ a^2 + 3,\ u - 1\rangle \\
I_4^u = \langle & d,\ c + 1,\ b,\ a - 1,\ u + 1\rangle \\
I_5^u = \langle & d - c + 1,\ 2cb - ca - c - b + a + 1,\ a^2c - ba - a^2 + 3c - b - 1,\ b^2 - b + 1,\ u - 1\rangle
\end{aligned}$$

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

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 28 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. $\boldsymbol{I_1^u = \langle -u^{11} + 5u^{10} + \cdots + 16d + 1,\ -u^{11} + 5u^{10} + \cdots + 16c + 1,\ -4u^{12} + 19u^{11} + \cdots + 16b + 7,\ -11u^{12} + 51u^{11} + \cdots + 16a + 2,\ u^{13} - 5u^{12} + \cdots - 4u + 1\rangle}$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 0.687500u^{12} - 3.18750u^{11} + \cdots + 8.68750u - 0.125000 \\ \frac{1}{4}u^{12} - \frac{19}{16}u^{11} + \cdots + 3u - \frac{7}{16} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} \frac{9}{8}u^{12} - \frac{87}{16}u^{11} + \cdots + \frac{49}{8}u - \frac{41}{16} \\ \frac{5}{16}u^{12} - \frac{3}{2}u^{11} + \cdots + \frac{15}{16}u - \frac{17}{16} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{9}{8}u^{12} - \frac{85}{16}u^{11} + \cdots + \frac{37}{4}u - \frac{57}{16} \\ \frac{3}{16}u^{12} - \frac{7}{8}u^{11} + \cdots + \frac{29}{16}u - \frac{17}{16} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^3 \\ -u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} \frac{1}{16}u^{11} - \frac{5}{16}u^{10} + \cdots + \frac{9}{4}u - \frac{1}{16} \\ \frac{1}{16}u^{11} - \frac{5}{16}u^{10} + \cdots + \frac{5}{4}u - \frac{1}{16} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.937500u^{12} - 4.43750u^{11} + \cdots + 7.43750u - 2.50000 \\ \frac{3}{16}u^{12} - \frac{7}{8}u^{11} + \cdots + \frac{29}{16}u - \frac{17}{16} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{16}u^{12} + \frac{5}{16}u^{11} + \cdots + \frac{1}{16}u - 1 \\ -0.0625000u^{12} + 0.312500u^{11} + \cdots - 2.25000u^2 + 0.0625000u \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} \frac{1}{16}u^{11} - \frac{5}{16}u^{10} + \cdots + \frac{5}{4}u - \frac{1}{16} \\ \frac{1}{16}u^{11} - \frac{5}{16}u^{10} + \cdots + \frac{5}{4}u - \frac{1}{16} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $=$
$-\frac{5}{4}u^{12} + \frac{47}{8}u^{11} - \frac{113}{8}u^{10} + \frac{75}{4}u^9 - \frac{127}{8}u^8 - \frac{19}{4}u^7 + \frac{129}{4}u^6 - \frac{101}{2}u^5 + \frac{31}{2}u^4 + \frac{135}{8}u^3 - \frac{385}{8}u^2 - \frac{9}{4}u - \frac{3}{8}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{13} + 3u^{12} + \cdots + 104u - 16$
c_2, c_5	$u^{13} + u^{12} + \cdots + 12u + 4$
c_3	$u^{13} - u^{12} + \cdots + 1508u + 548$
c_4, c_8	$u^{13} - 3u^{12} + \cdots - 32u + 32$
c_6, c_7, c_9 c_{11}	$u^{13} - 5u^{12} + \cdots - 4u + 1$
c_{10}, c_{12}	$u^{13} - u^{12} + \cdots + 16u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{13} + 15y^{12} + \cdots + 21024y - 256$
c_2, c_5	$y^{13} + 3y^{12} + \cdots + 104y - 16$
c_3	$y^{13} + 27y^{12} + \cdots + 1970472y - 300304$
c_4, c_8	$y^{13} + 15y^{12} + \cdots + 15616y^2 - 1024$
c_6, c_7, c_9 c_{11}	$y^{13} + y^{12} + \cdots + 16y - 1$
c_{10}, c_{12}	$y^{13} + 25y^{12} + \cdots - 260y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.801603 + 0.173700I$ $a = 0.33896 - 2.10199I$ $b = -0.386403 - 0.917053I$ $c = -2.30333 + 2.55112I$ $d = -1.50172 + 2.37742I$	$-2.92013 + 2.62586I$	$-15.8235 - 5.3570I$
$u = -0.801603 - 0.173700I$ $a = 0.33896 + 2.10199I$ $b = -0.386403 + 0.917053I$ $c = -2.30333 - 2.55112I$ $d = -1.50172 - 2.37742I$	$-2.92013 - 2.62586I$	$-15.8235 + 5.3570I$
$u = 0.536277 + 1.193890I$ $a = -0.51569 - 1.90253I$ $b = 0.543511 - 1.275200I$ $c = -0.123143 + 1.043180I$ $d = -0.659420 - 0.150709I$	$1.88235 - 4.50009I$	$-8.08386 + 3.64476I$
$u = 0.536277 - 1.193890I$ $a = -0.51569 + 1.90253I$ $b = 0.543511 + 1.275200I$ $c = -0.123143 - 1.043180I$ $d = -0.659420 + 0.150709I$	$1.88235 + 4.50009I$	$-8.08386 - 3.64476I$
$u = -0.16802 + 1.50582I$ $a = 0.228716 + 0.403848I$ $b = 1.124080 + 0.602862I$ $c = 0.040508 + 0.923402I$ $d = 0.208529 - 0.582421I$	$4.55733 + 1.91344I$	$-6.23694 - 1.74226I$
$u = -0.16802 - 1.50582I$ $a = 0.228716 - 0.403848I$ $b = 1.124080 - 0.602862I$ $c = 0.040508 - 0.923402I$ $d = 0.208529 + 0.582421I$	$4.55733 - 1.91344I$	$-6.23694 + 1.74226I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.484585$ $a = 0.133729$ $b = -0.330680$ $c = -1.26660$ $d = -0.782011$	-0.936151	-9.94250
$u = 0.221947 + 0.150698I$ $a = 2.33617 + 2.53886I$ $b = 0.416573 + 0.881458I$ $c = 0.432682 + 0.339349I$ $d = 0.210735 + 0.188651I$	$-0.33676 + 1.74909I$	$-2.22256 - 3.20069I$
$u = 0.221947 - 0.150698I$ $a = 2.33617 - 2.53886I$ $b = 0.416573 - 0.881458I$ $c = 0.432682 - 0.339349I$ $d = 0.210735 - 0.188651I$	$-0.33676 - 1.74909I$	$-2.22256 + 3.20069I$
$u = 1.47195 + 0.93931I$ $a = 0.33996 + 1.95869I$ $b = -0.85913 + 1.17284I$ $c = -0.780587 + 0.984352I$ $d = -2.25253 + 0.04505I$	$11.8885 - 13.4346I$	$-9.57192 + 6.10692I$
$u = 1.47195 - 0.93931I$ $a = 0.33996 - 1.95869I$ $b = -0.85913 - 1.17284I$ $c = -0.780587 - 0.984352I$ $d = -2.25253 - 0.04505I$	$11.8885 + 13.4346I$	$-9.57192 - 6.10692I$
$u = 1.48175 + 1.16585I$ $a = -0.794977 - 0.404986I$ $b = -1.173290 - 0.753740I$ $c = -0.632835 + 0.887715I$ $d = -2.11458 - 0.27814I$	$13.3607 - 6.1261I$	$-8.08998 + 1.87384I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 1.48175 - 1.16585I$		
$a = -0.794977 + 0.404986I$		
$b = -1.173290 + 0.753740I$	$13.3607 + 6.1261I$	$-8.08998 - 1.87384I$
$c = -0.632835 - 0.887715I$		
$d = -2.11458 + 0.27814I$		

II. $\boldsymbol{I_2^u = \langle -953u^9 + 3087u^8 + \cdots + 1.64 \times 10^4 d + 4012,\ u^9 - 3u^8 + \cdots + 16c + 8,\ 1173u^9 - 2403u^8 + \cdots + 3.29 \times 10^4 b - 1.50 \times 10^4,\ -5403u^9 + 3.48 \times 10^4 u^8 + \cdots + 1.31 \times 10^5 a - 2.82 \times 10^5,\ u^{10} - 3u^9 + \cdots + 8u + 16\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0411012u^9 - 0.264826u^8 + \cdots + 0.132143u + 2.14347 \\ -0.0356926u^9 + 0.0731195u^8 + \cdots + 1.02711u + 0.455088 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.0111748u^9 + 0.0180973u^8 + \cdots - 0.776998u + 1.11669 \\ -0.0664253u^9 + 0.182114u^8 + \cdots + 0.191121u - 0.0388267 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.0181430u^9 + 0.0259783u^8 + \cdots + 0.680981u + 1.11560 \\ -0.0188352u^9 + 0.0846215u^8 + \cdots + 1.15497u + 0.0210565 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^3 \\ -u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{16}u^9 + \frac{3}{16}u^8 + \cdots + \frac{23}{16}u - \frac{1}{2} \\ 0.0579966u^9 - 0.187865u^8 + \cdots + 0.244949u - 0.244158 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.000692247u^9 - 0.0586432u^8 + \cdots - 0.473991u + 1.09454 \\ -0.0188352u^9 + 0.0846215u^8 + \cdots + 1.15497u + 0.0210565 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.00138449u^9 - 0.132714u^8 + \cdots + 1.44798u + 1.56092 \\ 0.0272639u^9 - 0.0788705u^8 + \cdots + 0.408958u + 0.261928 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.120497u^9 + 0.375365u^8 + \cdots + 2.19255u - 0.255842 \\ -0.0208739u^9 + 0.0760102u^8 + \cdots + 1.06189u - 0.466164 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= \frac{2627}{8216}u^9 - \frac{5949}{8216}u^8 + \frac{10627}{8216}u^7 + \frac{7149}{8216}u^6 - \frac{750}{1027}u^5 + \frac{783}{4108}u^4 + \frac{3815}{632}u^3 - \frac{61}{4108}u^2 - \frac{48917}{8216}u - \frac{26527}{2054}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^5+6u^3+u-1)^2$
c_2, c_5	$(u^5+2u^4+2u^3+u+1)^2$
c_3	$(u^5-2u^4+14u^3+16u^2+9u+9)^2$
c_4, c_8	$(u^5+u^4+8u^3+u^2-4u+4)^2$
c_6, c_7, c_9 c_{11}	$u^{10}-3u^9+5u^8+3u^7-12u^6+10u^5+17u^4-18u^3-23u^2+8u+16$
c_{10}, c_{12}	$u^{10}-u^9+\cdots+800u+256$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^5+12y^4+38y^3+12y^2+y-1)^2$
c_2, c_5	$(y^5+6y^3+y-1)^2$
c_3	$(y^5+24y^4+278y^3+32y^2-207y-81)^2$
c_4, c_8	$(y^5+15y^4+54y^3-73y^2+8y-16)^2$
c_6, c_7, c_9 c_{11}	$y^{10}+y^9+\cdots-800y+256$
c_{10}, c_{12}	$y^{10}+37y^9+\cdots+56832y+65536$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.049680 + 0.199668I$ $a = -0.315545 - 1.329000I$ $b = 0.436447 - 0.655029I$ $c = 0.919405 - 0.174888I$ $d = -0.012768 + 0.392223I$	$-3.34738 - 1.37362I$	$-12.45374 + 4.59823I$
$u = 1.049680 - 0.199668I$ $a = -0.315545 + 1.329000I$ $b = 0.436447 + 0.655029I$ $c = 0.919405 + 0.174888I$ $d = -0.012768 - 0.392223I$	$-3.34738 + 1.37362I$	$-12.45374 - 4.59823I$
$u = -1.062450 + 0.192555I$ $a = 2.81509 + 0.58996I$ $b = 0.436447 - 0.655029I$ $c = -0.911290 - 0.165159I$ $d = -0.012768 + 0.392223I$	$-3.34738 - 1.37362I$	$-12.45374 + 4.59823I$
$u = -1.062450 - 0.192555I$ $a = 2.81509 - 0.58996I$ $b = 0.436447 + 0.655029I$ $c = -0.911290 + 0.165159I$ $d = -0.012768 - 0.392223I$	$-3.34738 + 1.37362I$	$-12.45374 - 4.59823I$
$u = -0.673909 + 0.602045I$ $a = -0.077759 - 0.365647I$ $b = -0.668466$ $c = -0.825250 - 0.737248I$ $d = -1.34782$	-0.737094	$-7.65039 + 0.I$
$u = -0.673909 - 0.602045I$ $a = -0.077759 + 0.365647I$ $b = -0.668466$ $c = -0.825250 + 0.737248I$ $d = -1.34782$	-0.737094	$-7.65039 + 0.I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.89973 + 1.70648I$ $a = -0.441618 - 0.955764I$ $b = -1.10221 - 1.09532I$ $c = 0.241760 - 0.458535I$ $d = 2.18668 + 0.19022I$	$14.4080 + 4.0569I$	$-7.72106 - 1.95729I$
$u = 0.89973 - 1.70648I$ $a = -0.441618 + 0.955764I$ $b = -1.10221 + 1.09532I$ $c = 0.241760 + 0.458535I$ $d = 2.18668 - 0.19022I$	$14.4080 - 4.0569I$	$-7.72106 + 1.95729I$
$u = 1.28694 + 1.51626I$ $a = -0.10517 + 1.45128I$ $b = -1.10221 + 1.09532I$ $c = 0.325375 - 0.383352I$ $d = 2.18668 - 0.19022I$	$14.4080 - 4.0569I$	$-7.72106 + 1.95729I$
$u = 1.28694 - 1.51626I$ $a = -0.10517 - 1.45128I$ $b = -1.10221 - 1.09532I$ $c = 0.325375 + 0.383352I$ $d = 2.18668 + 0.19022I$	$14.4080 + 4.0569I$	$-7.72106 - 1.95729I$

III. $\boldsymbol{I_3^u = \langle d-1,\ c-1,\ 2b-a-1,\ a^2+3,\ u-1\rangle}$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} a \\ \frac{1}{2}a + \frac{1}{2} \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} \frac{1}{2}a - \frac{1}{2} \\ \frac{1}{2}a - \frac{1}{2} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} a-1 \\ \frac{1}{2}a - \frac{1}{2} \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} \frac{1}{2}a - \frac{1}{2} \\ \frac{1}{2}a - \frac{1}{2} \end{pmatrix}$$

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2a - 9$

(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_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	$1.73205I$		
$b =$	$0.500000 + 0.866025I$	$-1.64493 + 2.02988I$	$-9.00000 - 3.46410I$
$c =$	1.00000		
$d =$	1.00000		
$u =$	1.00000		
$a =$	$-1.73205I$		
$b =$	$0.500000 - 0.866025I$	$-1.64493 - 2.02988I$	$-9.00000 + 3.46410I$
$c =$	1.00000		
$d =$	1.00000		

IV. $I_4^u = \langle d,\ c+1,\ b,\ a-1,\ u+1 \rangle$

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(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_8	u
c_6, c_9, c_{10} c_{12}	$u+1$
c_7, 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_8	y
c_6, c_7, c_9 c_{10}, c_{11}, c_{12}	$y-1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 1.00000$ $b = 0$ $c = -1.00000$ $d = 0$	-3.28987	-12.0000

V.

$\boldsymbol{I^u_5 = \langle d-c+1,\ 2cb-ca-c-b+a+1,\ a^2c-ba-a^2+3c-b-1,\ b^2-b+1,\ u-1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{1}{2}c^2a + a^2b - \frac{1}{2}c^2 - \frac{5}{4}ca + 2ba - a^2 + \frac{3}{4}c - \frac{27}{4}b + \frac{11}{4}a - \frac{37}{4}$

(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^u_5	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \cdots$ $a = \cdots$ $b = \cdots$ $c = \cdots$ $d = \cdots$	$-3.28987 + 2.02988I$	$-11.15346 - 3.50312I$

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4b-7$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5	$u^2 - u + 1$
c_2	$u^2 + u + 1$
c_4, c_6, c_8 c_{11}, c_{12}	u^2
c_7	$(u-1)^2$
c_9, 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_8 c_{11}, c_{12}	y^2
c_7, c_9, c_{10}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = 0.500000 - 0.866025I$ $c = -0.500000 + 0.866025I$ $d = 1.00000$	$-1.64493 + 2.02988I$	$-9.00000 - 3.46410I$
$v = -1.00000$ $a = 0$ $b = 0.500000 + 0.866025I$ $c = -0.500000 - 0.866025I$ $d = 1.00000$	$-1.64493 - 2.02988I$	$-9.00000 + 3.46410I$

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u^2-u+1)^2(u^5+6u^3+u-1)^2(u^{13}+3u^{12}+\cdots+104u-16)$
c_2	$u(u^2+u+1)^2(u^5+2u^4+\cdots+u+1)^2(u^{13}+u^{12}+\cdots+12u+4)$
c_3	$u(u^2-u+1)^2(u^5-2u^4+14u^3+16u^2+9u+9)^2$ $\cdot(u^{13}-u^{12}+\cdots+1508u+548)$
c_4, c_8	$u^5(u^5+u^4+\cdots-4u+4)^2(u^{13}-3u^{12}+\cdots-32u+32)$
c_5	$u(u^2-u+1)^2(u^5+2u^4+\cdots+u+1)^2(u^{13}+u^{12}+\cdots+12u+4)$
c_6	$u^2(u-1)^2(u+1)$ $\cdot(u^{10}-3u^9+5u^8+3u^7-12u^6+10u^5+17u^4-18u^3-23u^2+8u+16)$ $\cdot(u^{13}-5u^{12}+\cdots-4u+1)$
c_7	$u^2(u-1)^3$ $\cdot(u^{10}-3u^9+5u^8+3u^7-12u^6+10u^5+17u^4-18u^3-23u^2+8u+16)$ $\cdot(u^{13}-5u^{12}+\cdots-4u+1)$
c_9	$u^2(u+1)^3$ $\cdot(u^{10}-3u^9+5u^8+3u^7-12u^6+10u^5+17u^4-18u^3-23u^2+8u+16)$ $\cdot(u^{13}-5u^{12}+\cdots-4u+1)$
c_{10}, c_{12}	$u^2(u+1)^3(u^{10}-u^9+\cdots+800u+256)(u^{13}-u^{12}+\cdots+16u+1)$
c_{11}	$u^2(u-1)(u+1)^2$ $\cdot(u^{10}-3u^9+5u^8+3u^7-12u^6+10u^5+17u^4-18u^3-23u^2+8u+16)$ $\cdot(u^{13}-5u^{12}+\cdots-4u+1)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y^2+y+1)^2(y^5+12y^4+38y^3+12y^2+y-1)^2$ $\cdot\,(y^{13}+15y^{12}+\cdots+21024y-256)$
c_2, c_5	$y(y^2+y+1)^2(y^5+6y^3+y-1)^2(y^{13}+3y^{12}+\cdots+104y-16)$
c_3	$y(y^2+y+1)^2(y^5+24y^4+278y^3+32y^2-207y-81)^2$ $\cdot\,(y^{13}+27y^{12}+\cdots+1970472y-300304)$
c_4, c_8	$y^5(y^5+15y^4+54y^3-73y^2+8y-16)^2$ $\cdot\,(y^{13}+15y^{12}+\cdots+15616y^2-1024)$
c_6, c_7, c_9 c_{11}	$y^2(y-1)^3(y^{10}+y^9+\cdots-800y+256)(y^{13}+y^{12}+\cdots+16y-1)$
c_{10}, c_{12}	$y^2(y-1)^3(y^{10}+37y^9+\cdots+56832y+65536)$ $\cdot\,(y^{13}+25y^{12}+\cdots-260y-1)$