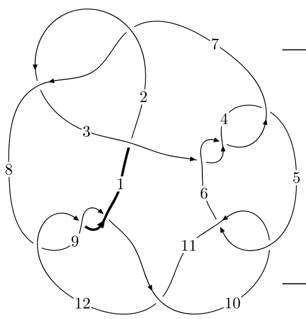
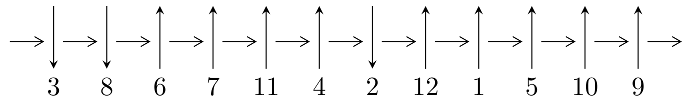
$12a_{0692}$ ($K12a_{0692}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

[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`).

$$
\begin{aligned}
I^u_1 = \langle &1645225595u^{22} + 1403326418u^{21} + \cdots + 92459847924d + 6684425356,\\
&-57765211u^{22} + 603981722u^{21} + \cdots + 61639898616c - 10033883264,\\
&764605576u^{22} + 1158469312u^{21} + \cdots + 46229923962b + 3650149526,\\
&1181950799u^{22} + 2420172188u^{21} + \cdots + 61639898616a - 56011531544,\\
&u^{23} + 2u^{22} + \cdots - 4u^2 + 8\rangle\\
I^u_2 = \langle &-4u^3a + 7u^2a - 6u^3 - au + 7u^2 + 7d + 2a - 12u + 10,\\
&-2u^3a + 7u^2a - 3u^3 - 4au + 7u^2 + 7c + a - 6u + 5,\ u^3a + 5u^3 + 2au - 7u^2 + 7b - 4a + 3u + 1,\\
&-u^3a + 2u^2a - 2u^3 + a^2 - 2au + 4u^2 - 2u + 1,\ u^4 - 2u^3 + 2u^2 - u + 1\rangle\\
I^u_3 = \langle &u^7 + u^6 - 2u^5 - u^4 + 2u^3 + 2u^2 + d - 2u - 1,\ u^6 - u^4 + 2u^2 + c - 1,\\
&-22u^7a - 11u^6a - 20u^7 + 9u^5a - 10u^6 + 21u^4a + 25u^5 - 14u^3a + 9u^4 - 43u^3 + 37b + 7a + 37u + 40,\\
&-4u^7a + 2u^7 + \cdots + 8a - 2,\ u^8 + u^7 - u^6 - 2u^5 + u^4 + 2u^3 - 2u - 1\rangle\\
I^u_4 = \langle &u^7c - 2u^7 - u^5c - u^6 - u^4c + 2u^5 + 2u^3c + 2u^4 + 2u^2c - 3u^3 - u^2 + d - 3c + u + 3,\\
&2u^7c + u^6c - u^7 - 2u^5c - 3u^4c + 2u^5 + 2u^3c + u^4 + 2u^2c - 3u^3 + c^2 - u^2 - 3c + u + 2,\ -u^5 + u^3 + b - u,\\
&u^3 + a,\ u^8 + u^7 - u^6 - 2u^5 + u^4 + 2u^3 - 2u - 1\rangle\\
I^u_5 = \langle &u^7 + u^6 - 2u^5 - u^4 + 2u^3 + 2u^2 + d - 2u - 1,\ u^6 - u^4 + 2u^2 + c - 1,\ -u^5 + u^3 + b - u,\ u^3 + a,\\
&u^8 + u^7 - u^6 - 2u^5 + u^4 + 2u^3 - 2u - 1\rangle\\
I^u_6 = \langle &u^4a - 3u^5 + u^3a + u^4 - u^2a + 4u^3 + au - 5u^2 + d + 2a - u + 5,\\
&2u^5a - u^5 - 2u^3a + u^4 + 2u^2a + 3u^3 + 2au - 3u^2 + 2c - 2a + u + 4,\\
&u^4a - u^5 + u^4 + u^3 + au - 2u^2 + b + u + 2,\\
&-3u^5a - u^4a - u^5 + 3u^3a - u^4 - 3u^2a - u^3 + 2a^2 - 3au + u^2 + 4a - u - 2,\\
&u^6 - u^5 - u^4 + 3u^3 - u^2 - 2u + 2\rangle
\end{aligned}
$$

$$
\begin{aligned}
I^v_1 &= \langle a,\ d + 1,\ c - a + 1,\ b + 1,\ v + 1\rangle\\
I^v_2 &= \langle a,\ d,\ c - 1,\ b + 1,\ v - 1\rangle\\
I^v_3 &= \langle c,\ d - 1,\ b,\ a - 1,\ v - 1\rangle\\
I^v_4 &= \langle a,\ da + c - v - 1,\ dv - 1,\ cv - v^2 + a - v,\ b + 1\rangle
\end{aligned}
$$

* 9 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 86 representations.
* 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. $I^u_1 = \langle 1.65 \times 10^9 u^{22} + 1.40 \times 10^9 u^{21} + \cdots + 9.25 \times 10^{10} d + 6.68 \times 10^9,\ -5.78 \times 10^7 u^{22} + 6.04 \times 10^8 u^{21} + \cdots + 6.16 \times 10^{10} c - 1.00 \times 10^{10},\ 7.65 \times 10^8 u^{22} + 1.16 \times 10^9 u^{21} + \cdots + 4.62 \times 10^{10} b + 3.65 \times 10^9,\ 1.18 \times 10^9 u^{22} + 2.42 \times 10^9 u^{21} + \cdots + 6.16 \times 10^{10} a - 5.60 \times 10^{10},\ u^{23} + 2u^{22} + \cdots - 4u^2 + 8 \rangle$

(i) Arc colorings

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

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

$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.000937140u^{22} - 0.00979855u^{21} + \cdots - 0.137025u + 0.162782 \\ -0.0177939u^{22} - 0.0151777u^{21} + \cdots + 0.995143u - 0.0722954 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.00986955u^{22} - 0.00319991u^{21} + \cdots + 1.12467u - 0.141695 \\ -0.000912892u^{22} - 0.00272992u^{21} + \cdots + 0.908690u + 0.153401 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -0.0191751u^{22} - 0.0392631u^{21} + \cdots + 0.119456u + 0.908690 \\ -0.0165392u^{22} - 0.0250589u^{21} + \cdots + 0.141695u - 0.0789564 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.00895666u^{22} + 0.000469997u^{21} + \cdots - 0.215981u + 0.295096 \\ -0.0120388u^{22} - 0.00566656u^{21} + \cdots + 0.980343u + 0.0138542 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.00903693u^{22} + 0.000279913u^{21} + \cdots - 0.185021u + 0.995143 \\ 0.0116728u^{22} + 0.0144841u^{21} + \cdots - 0.162782u + 0.00749712 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.00173177u^{22} - 0.0155024u^{21} + \cdots - 0.175640u + 0.980343 \\ 0.0174433u^{22} + 0.0237607u^{21} + \cdots - 0.295096u + 0.0716533 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0171752u^{22} + 0.0429380u^{21} + \cdots - 0.0481132u + 1.21453 \\ 0.0545823u^{22} + 0.0631700u^{21} + \cdots + 0.915273u + 0.299257 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{15567855023}{46229923962}u^{22} + \frac{8703838979}{46229923962}u^{21} + \cdots - \frac{168604101146}{23114961981}u + \frac{87470148380}{23114961981}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{23} + 10u^{22} + \cdots + 88u + 16$
c_2, c_7	$u^{23} - 2u^{22} + \cdots + 8u - 4$
c_3, c_4, c_6 c_8, c_9, c_{12}	$u^{23} + 2u^{22} + \cdots - u - 1$
c_5, c_{10}	$u^{23} - 2u^{22} + \cdots + 4u^2 - 8$
c_{11}	$u^{23} - 6u^{22} + \cdots + 64u - 64$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{23} + 6y^{22} + \cdots + 1824y - 256$
c_2, c_7	$y^{23} - 10y^{22} + \cdots + 88y - 16$
c_3, c_4, c_6 c_8, c_9, c_{12}	$y^{23} - 24y^{22} + \cdots - 9y - 1$
c_5, c_{10}	$y^{23} - 6y^{22} + \cdots + 64y - 64$
c_{11}	$y^{23} + 10y^{22} + \cdots - 6144y - 4096$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.758227 + 0.807207I$ $a = 0.65983 + 1.27023I$ $b = 0.027613 + 0.769755I$ $c = -0.393809 - 0.363183I$ $d = -0.468974 - 0.379047I$	$-5.90461 + 1.36538I$	$-0.279938 - 0.826772I$
$u = -0.758227 - 0.807207I$ $a = 0.65983 - 1.27023I$ $b = 0.027613 - 0.769755I$ $c = -0.393809 + 0.363183I$ $d = -0.468974 + 0.379047I$	$-5.90461 - 1.36538I$	$-0.279938 + 0.826772I$
$u = 0.830705 + 0.204801I$ $a = 0.205779 - 0.701670I$ $b = -0.423290 - 0.486601I$ $c = -0.049881 - 0.483602I$ $d = 0.434396 + 0.280584I$	$0.25505 + 3.01929I$	$7.24264 - 9.08374I$
$u = 0.830705 - 0.204801I$ $a = 0.205779 + 0.701670I$ $b = -0.423290 + 0.486601I$ $c = -0.049881 + 0.483602I$ $d = 0.434396 - 0.280584I$	$0.25505 - 3.01929I$	$7.24264 + 9.08374I$
$u = 0.112218 + 1.144740I$ $a = -0.975240 + 0.062634I$ $b = -1.392930 + 0.053326I$ $c = -0.03579 + 1.68894I$ $d = 0.42369 + 2.68034I$	$8.23677 - 2.50119I$	$13.28602 + 3.12140I$
$u = 0.112218 - 1.144740I$ $a = -0.975240 - 0.062634I$ $b = -1.392930 - 0.053326I$ $c = -0.03579 - 1.68894I$ $d = 0.42369 - 2.68034I$	$8.23677 + 2.50119I$	$13.28602 - 3.12140I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.561270 + 1.026650I$ $a = -0.909276 + 0.320219I$ $b = -1.332320 + 0.271054I$ $c = -0.15598 + 1.57216I$ $d = 1.88354 + 1.80349I$	$5.56899 - 4.43236I$	$12.33564 + 2.61344I$
$u = 0.561270 - 1.026650I$ $a = -0.909276 - 0.320219I$ $b = -1.332320 - 0.271054I$ $c = -0.15598 - 1.57216I$ $d = 1.88354 - 1.80349I$	$5.56899 + 4.43236I$	$12.33564 - 2.61344I$
$u = -0.972761 + 0.735330I$ $a = 0.435991 + 1.279060I$ $b = -0.128148 + 0.852673I$ $c = -0.356815 - 0.494380I$ $d = -0.010338 - 0.309906I$	$-5.23569 - 7.16228I$	$1.72036 + 6.58026I$
$u = -0.972761 - 0.735330I$ $a = 0.435991 - 1.279060I$ $b = -0.128148 - 0.852673I$ $c = -0.356815 + 0.494380I$ $d = -0.010338 + 0.309906I$	$-5.23569 + 7.16228I$	$1.72036 - 6.58026I$
$u = -0.701924 + 1.071670I$ $a = -0.939216 - 0.403120I$ $b = -1.355040 - 0.342624I$ $c = 0.12877 + 1.51945I$ $d = -2.42854 + 1.67823I$	$2.90411 + 9.45510I$	$9.09507 - 6.28090I$
$u = -0.701924 - 1.071670I$ $a = -0.939216 + 0.403120I$ $b = -1.355040 + 0.342624I$ $c = 0.12877 - 1.51945I$ $d = -2.42854 - 1.67823I$	$2.90411 - 9.45510I$	$9.09507 + 6.28090I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.324650 + 0.201985I$ $a = -0.528390 - 0.500497I$ $b = 1.47880 - 0.09640I$ $c = 1.63860 + 0.03463I$ $d = -0.086473 + 0.947361I$	$13.75320 - 2.16453I$	$16.4022 + 0.8027I$
$u = -1.324650 - 0.201985I$ $a = -0.528390 + 0.500497I$ $b = 1.47880 + 0.09640I$ $c = 1.63860 - 0.03463I$ $d = -0.086473 - 0.947361I$	$13.75320 + 2.16453I$	$16.4022 - 0.8027I$
$u = 1.140080 + 0.732610I$ $a = -0.00237 + 1.63419I$ $b = 1.39022 + 0.35769I$ $c = -1.51711 + 0.10256I$ $d = -1.19387 + 2.89111I$	$7.42067 + 10.78250I$	$12.9034 - 6.4003I$
$u = 1.140080 - 0.732610I$ $a = -0.00237 - 1.63419I$ $b = 1.39022 - 0.35769I$ $c = -1.51711 - 0.10256I$ $d = -1.19387 - 2.89111I$	$7.42067 - 10.78250I$	$12.9034 + 6.4003I$
$u = 1.315590 + 0.366431I$ $a = -0.378349 + 0.860467I$ $b = 1.47476 + 0.17549I$ $c = -1.61416 + 0.05615I$ $d = -0.05780 + 1.68875I$	$12.6616 + 7.9478I$	$14.6243 - 6.1519I$
$u = 1.315590 - 0.366431I$ $a = -0.378349 - 0.860467I$ $b = 1.47476 - 0.17549I$ $c = -1.61416 - 0.05615I$ $d = -0.05780 - 1.68875I$	$12.6616 - 7.9478I$	$14.6243 + 6.1519I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.618010$ $a = 0.115785$ $b = -0.535478$ $c = 0.463967$ $d = -0.579693$	0.841351	11.7320
$u = -1.130850 + 0.817356I$ $a = 0.14112 - 1.69304I$ $b = 1.38677 - 0.40113I$ $c = 1.49067 + 0.09360I$ $d = 1.38113 + 3.14130I$	$4.3220 - 16.2949I$	$9.65915 + 9.61437I$
$u = -1.130850 - 0.817356I$ $a = 0.14112 + 1.69304I$ $b = 1.38677 + 0.40113I$ $c = 1.49067 - 0.09360I$ $d = 1.38113 - 3.14130I$	$4.3220 + 16.2949I$	$9.65915 - 9.61437I$
$u = 0.237558 + 0.464767I$ $a = 1.232230 - 0.506488I$ $b = 0.141301 - 0.223079I$ $c = 0.1335290 + 0.0041366I$ $d = 0.413099 + 0.410875I$	$-1.63449 - 0.53093I$	$-3.85466 + 0.92872I$
$u = 0.237558 - 0.464767I$ $a = 1.232230 + 0.506488I$ $b = 0.141301 + 0.223079I$ $c = 0.1335290 - 0.0041366I$ $d = 0.413099 - 0.410875I$	$-1.63449 + 0.53093I$	$-3.85466 - 0.92872I$

II. $\boldsymbol{I_2^u = \langle -4u^3a - 6u^3 + \cdots + 2a + 10,\ -2u^3a - 3u^3 + \cdots + a + 5,\ u^3a + 5u^3 + \cdots - 4a + 1,\ -u^3a - 2u^3 + \cdots + a^2 + 1,\ u^4 - 2u^3 + 2u^2 - u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^3 + 4u^2 - 8u + 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^4+y^3+9y^2+y+1)^2$
c_2, c_7	$(y^4-3y^3+5y^2-3y+1)^2$
c_3, c_4, c_6 c_8, c_9, c_{12}	$y^8-5y^7+8y^6-10y^4+3y^3+5y^2-2y+1$
c_5, c_{10}	$(y^4+2y^2+3y+1)^2$
c_{11}	$(y^4+4y^3+6y^2-5y+1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.070696 + 0.758745I$ $a = -0.762101 - 0.037785I$ $b = -1.213740 - 0.031383I$ $c = -0.457945 + 0.239806I$ $d = -1.13826 + 1.05122I$	$2.21227 + 1.41376I$	$7.79581 - 4.79737I$
$u = -0.070696 + 0.758745I$ $a = 1.88384 + 1.34441I$ $b = 0.521295 + 0.349531I$ $c = 0.07969 + 1.93284I$ $d = -0.18895 + 1.45474I$	$2.21227 + 1.41376I$	$7.79581 - 4.79737I$
$u = -0.070696 - 0.758745I$ $a = -0.762101 + 0.037785I$ $b = -1.213740 + 0.031383I$ $c = -0.457945 - 0.239806I$ $d = -1.13826 - 1.05122I$	$2.21227 - 1.41376I$	$7.79581 + 4.79737I$
$u = -0.070696 - 0.758745I$ $a = 1.88384 - 1.34441I$ $b = 0.521295 - 0.349531I$ $c = 0.07969 - 1.93284I$ $d = -0.18895 - 1.45474I$	$2.21227 - 1.41376I$	$7.79581 + 4.79737I$
$u = 1.070700 + 0.758745I$ $a = 0.366524 - 1.338260I$ $b = -0.162537 - 0.919710I$ $c = -1.49950 + 0.12150I$ $d = -1.45261 + 2.85433I$	$-0.56734 + 11.56320I$	$6.20419 - 8.26147I$
$u = 1.070700 + 0.758745I$ $a = 0.01173 + 1.77886I$ $b = 1.354980 + 0.371832I$ $c = 0.377761 - 0.546931I$ $d = -0.220186 - 0.348363I$	$-0.56734 + 11.56320I$	$6.20419 - 8.26147I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 1.070700 - 0.758745I$ $a = \quad 0.366524 + 1.338260I$ $b = -0.162537 + 0.919710I$ $c = -1.49950 - 0.12150I$ $d = -1.45261 - 2.85433I$	$-0.56734 - 11.56320I$	$6.20419 + 8.26147I$
$u = \quad 1.070700 - 0.758745I$ $a = \quad 0.01173 - 1.77886I$ $b = \quad 1.354980 - 0.371832I$ $c = \quad 0.377761 + 0.546931I$ $d = -0.220186 + 0.348363I$	$-0.56734 - 11.56320I$	$6.20419 + 8.26147I$

III. $\boldsymbol{I^u_3 = \langle u^7 + u^6 + \cdots + d - 1,\ u^6 - u^4 + 2u^2 + c - 1,\ -22u^7a - 20u^7 + \cdots + 7a + 40,\ -4u^7a + 2u^7 + \cdots + 8a - 2,\ u^8 + u^7 + \cdots - 2u - 1\rangle}$

(i) Arc colorings

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

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

$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^6 + u^4 - 2u^2 + 1 \\ -u^7 - u^6 + 2u^5 + u^4 - 2u^3 - 2u^2 + 2u + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^4 + u^2 - 1 \\ -u^4 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} a \\ 0.594595au^7 + 0.540541u^7 + \cdots - 0.189189a - 1.08108 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} -0.540541au^7 - 0.945946u^7 + \cdots + 1.08108a + 1.89189 \\ 0.0540541au^7 - 0.405405u^7 + \cdots - 0.108108a + 0.810811 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.594595au^7 - 0.540541u^7 + \cdots + 1.18919a + 1.08108 \\ -0.594595au^7 - 0.540541u^7 + \cdots + 0.189189a + 1.08108 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.540541au^7 - 0.0540541u^7 + \cdots + 0.918919a + 0.108108 \\ 1.08108au^7 + 0.891892u^7 + \cdots - 0.162162a - 1.78378 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7 + 8u^5 + 4u^4 - 8u^3 - 4u^2 + 4u + 14$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{16}+9u^{15}+\cdots-8u^2+1$
c_2, c_7, c_8 c_9, c_{12}	$u^{16}-u^{15}+\cdots+2u-1$
c_3, c_4, c_6	$(u^8+u^7-3u^6-2u^5+3u^4+2u-1)^2$
c_5, c_{10}	$(u^8-u^7-u^6+2u^5+u^4-2u^3+2u-1)^2$
c_{11}	$(u^8-3u^7+7u^6-10u^5+11u^4-10u^3+6u^2-4u+1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{16} - 5y^{15} + \cdots - 16y + 1$
c_2, c_7, c_8 c_9, c_{12}	$y^{16} - 9y^{15} + \cdots - 8y^2 + 1$
c_3, c_4, c_6	$(y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1)^2$
c_5, c_{10}	$(y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1)^2$
c_{11}	$(y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.570868 + 0.730671I$ $a = 0.85267 + 1.13323I$ $b = 0.097535 + 0.616980I$ $c = 0.33804 + 1.54318I$ $d = -1.43432 + 0.96489I$	$1.04066 + 1.13123I$	$7.41522 - 0.51079I$
$u = -0.570868 + 0.730671I$ $a = 0.43836 - 3.06608I$ $b = 1.082580 - 0.348383I$ $c = 0.33804 + 1.54318I$ $d = -1.43432 + 0.96489I$	$1.04066 + 1.13123I$	$7.41522 - 0.51079I$
$u = -0.570868 - 0.730671I$ $a = 0.85267 - 1.13323I$ $b = 0.097535 - 0.616980I$ $c = 0.33804 - 1.54318I$ $d = -1.43432 - 0.96489I$	$1.04066 - 1.13123I$	$7.41522 + 0.51079I$
$u = -0.570868 - 0.730671I$ $a = 0.43836 + 3.06608I$ $b = 1.082580 + 0.348383I$ $c = 0.33804 - 1.54318I$ $d = -1.43432 - 0.96489I$	$1.04066 - 1.13123I$	$7.41522 + 0.51079I$
$u = 0.855237 + 0.665892I$ $a = -0.683988 + 0.514398I$ $b = -1.134620 + 0.424735I$ $c = 0.306664 - 0.427719I$ $d = 0.233537 - 0.170925I$	$-2.15941 + 2.57849I$	$4.27708 - 3.56796I$
$u = 0.855237 + 0.665892I$ $a = -0.24547 + 2.30190I$ $b = 1.242710 + 0.322774I$ $c = 0.306664 - 0.427719I$ $d = 0.233537 - 0.170925I$	$-2.15941 + 2.57849I$	$4.27708 - 3.56796I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.855237 - 0.665892I$ $a = -0.683988 - 0.514398I$ $b = -1.134620 - 0.424735I$ $c = 0.306664 + 0.427719I$ $d = 0.233537 + 0.170925I$	$-2.15941 - 2.57849I$	$4.27708 + 3.56796I$
$u = 0.855237 - 0.665892I$ $a = -0.24547 - 2.30190I$ $b = 1.242710 - 0.322774I$ $c = 0.306664 + 0.427719I$ $d = 0.233537 + 0.170925I$	$-2.15941 - 2.57849I$	$4.27708 + 3.56796I$
$u = 1.09818$ $a = -0.166989 + 0.837022I$ $b = -0.685501 + 0.640105I$ $c = -1.71160$ $d = -0.895847$	6.50273	13.8640
$u = 1.09818$ $a = -0.166989 - 0.837022I$ $b = -0.685501 - 0.640105I$ $c = -1.71160$ $d = -0.895847$	6.50273	13.8640
$u = -1.031810 + 0.655470I$ $a = -0.688737 - 0.639006I$ $b = -1.130780 - 0.529217I$ $c = 1.53294 + 0.14882I$ $d = 1.41965 + 2.49301I$	$2.37968 - 6.44354I$	$9.42845 + 5.29417I$
$u = -1.031810 + 0.655470I$ $a = 0.351395 + 1.239290I$ $b = -0.203747 + 0.848147I$ $c = 1.53294 + 0.14882I$ $d = 1.41965 + 2.49301I$	$2.37968 - 6.44354I$	$9.42845 + 5.29417I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.031810 - 0.655470I$ $a = -0.688737 + 0.639006I$ $b = -1.130780 + 0.529217I$ $c = \quad 1.53294 - 0.14882I$ $d = \quad 1.41965 - 2.49301I$	$2.37968 + 6.44354I$	$9.42845 - 5.29417I$
$u = -1.031810 - 0.655470I$ $a = \quad 0.351395 - 1.239290I$ $b = -0.203747 - 0.848147I$ $c = \quad 1.53294 - 0.14882I$ $d = \quad 1.41965 - 2.49301I$	$2.37968 + 6.44354I$	$9.42845 - 5.29417I$
$u = -0.603304$ $a = -0.0902138$ $b = -0.684028$ $c = \quad 0.356309$ $d = -0.541881$	0.845036	11.8940
$u = -0.603304$ $a = -5.62425$ $b = \quad 1.14767$ $c = \quad 0.356309$ $d = -0.541881$	0.845036	11.8940

IV. $\boldsymbol{I^u_4 = \langle u^7c - 2u^7 + \cdots - 3c + 3,\ 2u^7c - u^7 + \cdots - 3c + 2,\ -u^5 + u^3 + b - u,\ u^3 + a,\ u^8 + u^7 + \cdots - 2u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7 + 8u^5 + 4u^4 - 8u^3 - 4u^2 + 4u + 14$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{16} + 9u^{15} + \cdots - 8u^2 + 1$
c_2, c_3, c_4 c_6, c_7	$u^{16} - u^{15} + \cdots + 2u - 1$
c_5, c_{10}	$(u^8 - u^7 - u^6 + 2u^5 + u^4 - 2u^3 + 2u - 1)^2$
c_8, c_9, c_{12}	$(u^8 + u^7 - 3u^6 - 2u^5 + 3u^4 + 2u - 1)^2$
c_{11}	$(u^8 - 3u^7 + 7u^6 - 10u^5 + 11u^4 - 10u^3 + 6u^2 - 4u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{16} - 5y^{15} + \cdots - 16y + 1$
c_2, c_3, c_4 c_6, c_7	$y^{16} - 9y^{15} + \cdots - 8y^2 + 1$
c_5, c_{10}	$(y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1)^2$
c_8, c_9, c_{12}	$(y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1)^2$
c_{11}	$(y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.570868+0.730671I$ $a=-0.728286-0.324264I$ $b=-1.180120-0.268597I$ $c=\ \ 1.338630+0.392019I$ $d=\ \ 2.30490+2.27899I$	$1.04066+1.13123I$	$7.41522-0.51079I$
$u=-0.570868+0.730671I$ $a=-0.728286-0.324264I$ $b=-1.180120-0.268597I$ $c=-0.348718-0.235508I$ $d=-0.684355-0.082854I$	$1.04066+1.13123I$	$7.41522-0.51079I$
$u=-0.570868-0.730671I$ $a=-0.728286+0.324264I$ $b=-1.180120+0.268597I$ $c=\ \ 1.338630-0.392019I$ $d=\ \ 2.30490-2.27899I$	$1.04066-1.13123I$	$7.41522+0.51079I$
$u=-0.570868-0.730671I$ $a=-0.728286+0.324264I$ $b=-1.180120+0.268597I$ $c=-0.348718+0.235508I$ $d=-0.684355+0.082854I$	$1.04066-1.13123I$	$7.41522+0.51079I$
$u=\ \ 0.855237+0.665892I$ $a=\ \ 0.512122-1.165900I$ $b=-0.108090-0.747508I$ $c=-0.259529+1.329030I$ $d=\ \ 1.91420+0.28957I$	$-2.15941+2.57849I$	$4.27708-3.56796I$
$u=\ \ 0.855237+0.665892I$ $a=\ \ 0.512122-1.165900I$ $b=-0.108090-0.747508I$ $c=-1.50305+0.23227I$ $d=-1.89317+2.34673I$	$-2.15941+2.57849I$	$4.27708-3.56796I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.855237 - 0.665892I$ $a = 0.512122 + 1.165900I$ $b = -0.108090 + 0.747508I$ $c = -0.259529 - 1.329030I$ $d = 1.91420 - 0.28957I$	$-2.15941 - 2.57849I$	$4.27708 + 3.56796I$
$u = 0.855237 - 0.665892I$ $a = 0.512122 + 1.165900I$ $b = -0.108090 + 0.747508I$ $c = -1.50305 - 0.23227I$ $d = -1.89317 - 2.34673I$	$-2.15941 - 2.57849I$	$4.27708 + 3.56796I$
$u = 1.09818$ $a = -1.32440$ $b = 1.37100$ $c = -0.054797 + 0.799128I$ $d = 0.635504 - 0.747497I$	6.50273	13.8640
$u = 1.09818$ $a = -1.32440$ $b = 1.37100$ $c = -0.054797 - 0.799128I$ $d = 0.635504 + 0.747497I$	6.50273	13.8640
$u = -1.031810 + 0.655470I$ $a = -0.23143 - 1.81188I$ $b = 1.334530 - 0.318930I$ $c = 0.164531 + 1.264480I$ $d = -2.19900 - 0.17735I$	$2.37968 - 6.44354I$	$9.42845 + 5.29417I$
$u = -1.031810 + 0.655470I$ $a = -0.23143 - 1.81188I$ $b = 1.334530 - 0.318930I$ $c = -0.316450 - 0.535989I$ $d = 0.096756 - 0.127406I$	$2.37968 - 6.44354I$	$9.42845 + 5.29417I$

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.031810 - 0.655470I$ $a = -0.23143 + 1.81188I$ $b = 1.334530 + 0.318930I$ $c = 0.164531 - 1.264480I$ $d = -2.19900 + 0.17735I$	$2.37968 + 6.44354I$	$9.42845 - 5.29417I$
$u = -1.031810 - 0.655470I$ $a = -0.23143 + 1.81188I$ $b = 1.334530 + 0.318930I$ $c = -0.316450 + 0.535989I$ $d = 0.096756 + 0.127406I$	$2.37968 + 6.44354I$	$9.42845 - 5.29417I$
$u = -0.603304$ $a = 0.219587$ $b = -0.463640$ $c = 0.775554$ $d = -0.640533$	0.845036	11.8940
$u = -0.603304$ $a = 0.219587$ $b = -0.463640$ $c = 2.18322$ $d = 3.29089$	0.845036	11.8940

V. $\boldsymbol{I^u_5 = \langle u^7 + u^6 + \cdots + d - 1,\ u^6 - u^4 + 2u^2 + c - 1,\ -u^5 + u^3 + b - u,\ u^3 + a,\ u^8 + u^7 + \cdots - 2u - 1\rangle}$

(i) Arc colorings

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

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

$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^6 + u^4 - 2u^2 + 1 \\ -u^7 - u^6 + 2u^5 + u^4 - 2u^3 - 2u^2 + 2u + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^4 + u^2 - 1 \\ -u^4 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} u^7 - 2u^5 + 2u^3 - 2u \\ u^7 - u^5 + 2u^3 - u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u^6 + u^4 - 2u^2 + 1 \\ -u^7 - u^6 + 2u^5 + u^4 - 2u^3 - 2u^2 + 2u + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7 + 8u^5 + 4u^4 - 8u^3 - 4u^2 + 4u + 14$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8+7u^7+19u^6+22u^5+3u^4-14u^3-6u^2+4u+1$
c_2, c_3, c_4 c_6, c_7, c_8 c_9, c_{12}	$u^8+u^7-3u^6-2u^5+3u^4+2u-1$
c_5, c_{10}	$u^8-u^7-u^6+2u^5+u^4-2u^3+2u-1$
c_{11}	$u^8-3u^7+7u^6-10u^5+11u^4-10u^3+6u^2-4u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 - 11y^7 + 59y^6 - 186y^5 + 343y^4 - 370y^3 + 154y^2 - 28y + 1$
c_2, c_3, c_4 c_6, c_7, c_8 c_9, c_{12}	$y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1$
c_5, c_{10}	$y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1$
c_{11}	$y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.570868 + 0.730671I$ $a = -0.728286 - 0.324264I$ $b = -1.180120 - 0.268597I$ $c = 0.33804 + 1.54318I$ $d = -1.43432 + 0.96489I$	$1.04066 + 1.13123I$	$7.41522 - 0.51079I$
$u = -0.570868 - 0.730671I$ $a = -0.728286 + 0.324264I$ $b = -1.180120 + 0.268597I$ $c = 0.33804 - 1.54318I$ $d = -1.43432 - 0.96489I$	$1.04066 - 1.13123I$	$7.41522 + 0.51079I$
$u = 0.855237 + 0.665892I$ $a = 0.512122 - 1.165900I$ $b = -0.108090 - 0.747508I$ $c = 0.306664 - 0.427719I$ $d = 0.233537 - 0.170925I$	$-2.15941 + 2.57849I$	$4.27708 - 3.56796I$
$u = 0.855237 - 0.665892I$ $a = 0.512122 + 1.165900I$ $b = -0.108090 + 0.747508I$ $c = 0.306664 + 0.427719I$ $d = 0.233537 + 0.170925I$	$-2.15941 - 2.57849I$	$4.27708 + 3.56796I$
$u = 1.09818$ $a = -1.32440$ $b = 1.37100$ $c = -1.71160$ $d = -0.895847$	6.50273	13.8640
$u = -1.031810 + 0.655470I$ $a = -0.23143 - 1.81188I$ $b = 1.334530 - 0.318930I$ $c = 1.53294 + 0.14882I$ $d = 1.41965 + 2.49301I$	$2.37968 - 6.44354I$	$9.42845 + 5.29417I$

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.031810 - 0.655470I$ $a = -0.23143 + 1.81188I$ $b = 1.334530 + 0.318930I$ $c = 1.53294 - 0.14882I$ $d = 1.41965 - 2.49301I$	$2.37968 + 6.44354I$	$9.42845 - 5.29417I$
$u = -0.603304$ $a = 0.219587$ $b = -0.463640$ $c = 0.356309$ $d = -0.541881$	0.845036	11.8940

VI. $I_6^u = \langle u^4a - 3u^5 + \cdots + 2a + 5,\ 2u^5a - u^5 + \cdots - 2a + 4,\ u^4a - u^5 + \cdots + b + 2,\ -3u^5a - u^5 + \cdots + 4a - 2,\ u^6 - u^5 + \cdots - 2u + 2\rangle$

(i) Arc colorings

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

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

$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^5a + \frac{1}{2}u^5 + \cdots + a - 2 \\ -u^4a + 3u^5 - u^3a - u^4 + u^2a - 4u^3 - au + 5u^2 - 2a + u - 5 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{3}{2}u^5 - \frac{1}{2}u^4 + \cdots - a - 3 \\ 2u^5 - 3u^3 - au + 3u^2 + u - 3 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} a \\ -u^4a + u^5 - u^4 - u^3 - au + 2u^2 - u - 2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{1}{2}u^5 + \frac{1}{2}u^4 + \cdots + a + \frac{1}{2}u \\ -u^5a + u^5 + u^3a - u^2a - u^3 - au + u^2 - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^5a + u^4a - 2u^5 + 2u^3a + u^4 - 2u^2a + 2u^3 - 4u^2 + 3a + 4 \\ -u^5a - u^5 + 2u^3a - 2u^2a + u^3 - au - 2u^2 + 2a - u + 2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^4a - u^5 + u^4 - u^2a + u^3 + au - 2u^2 + a + u + 2 \\ u^4a - u^5 + u^4 - u^2a + u^3 + au - 2u^2 + u + 2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{2}u^5 - \frac{1}{2}u^4 + \cdots + 2a - \frac{1}{2}u \\ -u^5a + u^5 + 2u^3a - u^4 - 2u^2a - u^3 - 2au + u^2 + 2a - u - 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^5 - 4u^4 + 8u^3 - 8u + 16$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.954425 + 0.469441I$ $a = -0.543939 + 0.599164I$ $b = -1.013300 + 0.485889I$ $c = -1.61874 + 0.18698I$ $d = -1.52081 + 1.85766I$	$4.85214 + 1.71504I$	$13.36090 - 1.32670I$
$u = 0.954425 + 0.469441I$ $a = -0.84764 + 1.84095I$ $b = 1.297290 + 0.224098I$ $c = -0.258456 + 1.158850I$ $d = 1.61170 - 0.24019I$	$4.85214 + 1.71504I$	$13.36090 - 1.32670I$
$u = 0.954425 - 0.469441I$ $a = -0.543939 - 0.599164I$ $b = -1.013300 - 0.485889I$ $c = -1.61874 - 0.18698I$ $d = -1.52081 - 1.85766I$	$4.85214 - 1.71504I$	$13.36090 + 1.32670I$
$u = 0.954425 - 0.469441I$ $a = -0.84764 - 1.84095I$ $b = 1.297290 - 0.224098I$ $c = -0.258456 - 1.158850I$ $d = 1.61170 + 0.24019I$	$4.85214 - 1.71504I$	$13.36090 + 1.32670I$
$u = -1.130290 + 0.224113I$ $a = 0.003531 + 0.984620I$ $b = -0.529009 + 0.730272I$ $c = 1.67457 + 0.07044I$ $d = 0.781173 + 0.975415I$	$6.01369 - 4.89103I$	$12.12173 + 6.59162I$
$u = -1.130290 + 0.224113I$ $a = -1.023270 - 0.773208I$ $b = 1.385610 - 0.106695I$ $c = -0.085338 - 0.700500I$ $d = -0.199297 + 0.648369I$	$6.01369 - 4.89103I$	$12.12173 + 6.59162I$

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.130290 - 0.224113I$ $a = 0.003531 - 0.984620I$ $b = -0.529009 - 0.730272I$ $c = 1.67457 - 0.07044I$ $d = 0.781173 - 0.975415I$	$6.01369 + 4.89103I$	$12.12173 - 6.59162I$
$u = -1.130290 - 0.224113I$ $a = -1.023270 + 0.773208I$ $b = 1.385610 + 0.106695I$ $c = -0.085338 + 0.700500I$ $d = -0.199297 - 0.648369I$	$6.01369 + 4.89103I$	$12.12173 - 6.59162I$
$u = 0.675862 + 0.935235I$ $a = -0.855739 + 0.390801I$ $b = -1.284560 + 0.329038I$ $c = 0.476837 - 0.318716I$ $d = 0.762506 - 0.547149I$	$-1.81870 - 5.32947I$	$4.51738 + 4.54389I$
$u = 0.675862 + 0.935235I$ $a = 0.76705 - 1.38346I$ $b = 0.143970 - 0.800673I$ $c = -0.18887 + 1.51212I$ $d = 2.06473 + 1.31344I$	$-1.81870 - 5.32947I$	$4.51738 + 4.54389I$
$u = 0.675862 - 0.935235I$ $a = -0.855739 - 0.390801I$ $b = -1.284560 - 0.329038I$ $c = 0.476837 + 0.318716I$ $d = 0.762506 + 0.547149I$	$-1.81870 + 5.32947I$	$4.51738 - 4.54389I$
$u = 0.675862 - 0.935235I$ $a = 0.76705 + 1.38346I$ $b = 0.143970 + 0.800673I$ $c = -0.18887 - 1.51212I$ $d = 2.06473 - 1.31344I$	$-1.81870 + 5.32947I$	$4.51738 - 4.54389I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = -1.00000$ $c = -1.00000$ $d = -1.00000$	3.28987	12.0000

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(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_{12}	$u - 1$
c_3, c_4, c_5 c_6, c_{10}, c_{11}	u
c_7, c_8, c_9	$u + 1$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 1.00000$		
$a = 0$		
$b = -1.00000$	0	0
$c = 1.00000$		
$d = 0$		

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^v		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v =$	1.00000		
$a =$	1.00000		
$b =$	0	0	0
$c =$	0		
$d =$	1.00000		

X. $\boldsymbol{I_4^v = \langle a,\ da + c - v - 1,\ dv - 1,\ cv - v^2 + a - v,\ b + 1 \rangle}$

(i) Arc colorings

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

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

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

$$a_4 = \begin{pmatrix} v + 1 \\ d \end{pmatrix}$$

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

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

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

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

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

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

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

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

(ii) Obstruction class $= -1$

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

(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_4^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = \cdots$		
$a = \cdots$		
$b = \cdots$	1.64493	$8.90487 - 0.21066I$
$c = \cdots$		
$d = \cdots$		

XI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u-1)^2(u^4+3u^3+5u^2+3u+1)^2$ $\cdot(u^6+2u^5+3u^4+u^3+u^2-u+1)^2$ $\cdot(u^8+7u^7+19u^6+22u^5+3u^4-14u^3-6u^2+4u+1)$ $\cdot((u^{16}+9u^{15}+\cdots-8u^2+1)^2)(u^{23}+10u^{22}+\cdots+88u+16)$
c_2, c_7	$u(u-1)(u+1)(u^4-u^3-u^2+u+1)^2(u^6-u^4+u^3+u^2-u+1)^2$ $\cdot(u^8+u^7-3u^6-2u^5+3u^4+2u-1)(u^{16}-u^{15}+\cdots+2u-1)^2$ $\cdot(u^{23}-2u^{22}+\cdots+8u-4)$
c_3, c_4, c_8 c_9	$u(u+1)^2(u^8+u^7-3u^6-2u^5+3u^4+2u-1)^3$ $\cdot(u^8+u^7-2u^6-2u^5-u^3+u^2+2u+1)$ $\cdot(u^{12}-5u^{10}+2u^9+9u^8-7u^7-4u^6+7u^5-4u^4+2u^3+u^2-4u+4)$ $\cdot(u^{16}-u^{15}+\cdots+2u-1)(u^{23}+2u^{22}+\cdots-u-1)$
c_5, c_{10}	$u^3(u^4+2u^3+2u^2+u+1)^2(u^6+u^5-u^4-3u^3-u^2+2u+2)^2$ $\cdot((u^8-u^7+\cdots+2u-1)^5)(u^{23}-2u^{22}+\cdots+4u^2-8)$
c_6, c_{12}	$u(u-1)^2(u^8+u^7-3u^6-2u^5+3u^4+2u-1)^3$ $\cdot(u^8+u^7-2u^6-2u^5-u^3+u^2+2u+1)$ $\cdot(u^{12}-5u^{10}+2u^9+9u^8-7u^7-4u^6+7u^5-4u^4+2u^3+u^2-4u+4)$ $\cdot(u^{16}-u^{15}+\cdots+2u-1)(u^{23}+2u^{22}+\cdots-u-1)$
c_{11}	$u^3(u^4+2u^2+3u+1)^2(u^6-3u^5+5u^4-7u^3+9u^2-8u+4)^2$ $\cdot(u^8-3u^7+7u^6-10u^5+11u^4-10u^3+6u^2-4u+1)^5$ $\cdot(u^{23}-6u^{22}+\cdots+64u-64)$

XII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y-1)^2(y^4+y^3+9y^2+y+1)^2$ $\cdot(y^6+2y^5+7y^4+11y^3+9y^2+y+1)^2$ $\cdot(y^8-11y^7+59y^6-186y^5+343y^4-370y^3+154y^2-28y+1)$ $\cdot((y^{16}-5y^{15}+\cdots-16y+1)^2)(y^{23}+6y^{22}+\cdots+1824y-256)$
c_2, c_7	$y(y-1)^2(y^4-3y^3+5y^2-3y+1)^2$ $\cdot(y^6-2y^5+3y^4-y^3+y^2+y+1)^2$ $\cdot(y^8-7y^7+19y^6-22y^5+3y^4+14y^3-6y^2-4y+1)$ $\cdot((y^{16}-9y^{15}+\cdots-8y^2+1)^2)(y^{23}-10y^{22}+\cdots+88y-16)$
c_3, c_4, c_6 c_8, c_9, c_{12}	$y(y-1)^2(y^8-7y^7+19y^6-22y^5+3y^4+14y^3-6y^2-4y+1)^3$ $\cdot(y^8-5y^7+8y^6-10y^4+3y^3+5y^2-2y+1)$ $\cdot(y^{12}-10y^{11}+\cdots-8y+16)(y^{16}-9y^{15}+\cdots-8y^2+1)$ $\cdot(y^{23}-24y^{22}+\cdots-9y-1)$
c_5, c_{10}	$y^3(y^4+2y^2+3y+1)^2(y^6-3y^5+5y^4-7y^3+9y^2-8y+4)^2$ $\cdot(y^8-3y^7+7y^6-10y^5+11y^4-10y^3+6y^2-4y+1)^5$ $\cdot(y^{23}-6y^{22}+\cdots+64y-64)$
c_{11}	$y^3(y^4+4y^3+6y^2-5y+1)^2(y^6+y^5+y^4+y^3+9y^2+8y+16)^2$ $\cdot(y^8+5y^7+11y^6+6y^5-17y^4-34y^3-22y^2-4y+1)^5$ $\cdot(y^{23}+10y^{22}+\cdots-6144y-4096)$