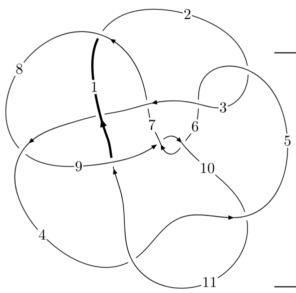
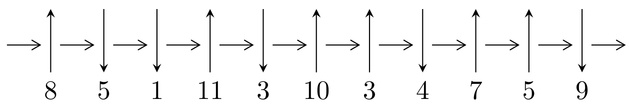
$11n_{165}$ ($K11n_{165}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -766790u^{19} + 10314727u^{18} + \cdots + 13340393b - 9262246,$$
$$-9262246u^{19} + 139639714u^{18} + \cdots + 17425109a + 534767514,\ u^{20} - 14u^{19} + \cdots - 140u + 13\rangle$$
$$I_2^u = \langle -a^3u^3 + 4u^3a^2 + \cdots + 75a - 12,$$
$$-a^3u^2 + a^4 - 2a^3u + 3a^2u^2 - 2u^3a - 2a^3 + 5a^2u - 4u^2a + u^3 + 5a^2 - 5au - u^2 - a - 3u - 6,$$
$$u^4 + u^3 + u^2 - u + 1\rangle$$
$$I_3^u = \langle 25u^{11} + 234u^{10} + \cdots + 167b + 63,\ -63u^{11} - 416u^{10} + \cdots + 167a + 55,$$
$$u^{12} + 7u^{11} + 26u^{10} + 60u^9 + 91u^8 + 87u^7 + 46u^6 + 5u^5 - 5u^4 - u^3 + u^2 + 1\rangle$$
$$I_4^u = \langle u^3 - au + u^2 + b - 1,\ -u^3a - 3u^2a - u^3 + a^2 - 3au - 3u^2 - a - 4u - 2,\ u^4 + 2u^3 + 2u^2 + u + 1\rangle$$
$$I_5^u = \langle -u^3 - au - 2u^2 + b - 2u,\ u^2a + a^2 + 2au + 2a - 1,\ u^4 + 2u^3 + 2u^2 + u + 1\rangle$$

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

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 66 representations.

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

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

I. $I_1^u =$
$\langle -7.67\times10^5u^{19}+1.03\times10^7u^{18}+\cdots+1.34\times10^6b-9.26\times10^6,\ -9.26\times10^6u^{19}+1.40\times10^8u^{18}+\cdots+1.74\times10^7a+5.35\times10^8,\ u^{20}-14u^{19}+\cdots-140u+13\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0.531546u^{19}-8.01371u^{18}+\cdots+299.293u-30.6895\\0.572064u^{19}-7.69530u^{18}+\cdots-43.7270u+6.91010\end{pmatrix}$$
$$a_8 = \begin{pmatrix}1.10361u^{19}-15.7090u^{18}+\cdots+255.567u-23.7794\\0.572064u^{19}-7.69530u^{18}+\cdots-43.7270u+6.91010\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1.60433u^{19}-22.5319u^{18}+\cdots+349.827u-34.0496\\1.31746u^{19}-15.8315u^{18}+\cdots-63.4249u+9.34363\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}1.03159u^{19}-13.4015u^{18}+\cdots+183.124u-20.5381\\-1.04074u^{19}+13.5128u^{18}+\cdots-122.884u+13.4107\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1.71042u^{19}-22.8588u^{18}+\cdots+203.782u-20.2563\\-0.0294787u^{19}+1.23697u^{18}+\cdots-85.9094u+8.70582\end{pmatrix}$$
$$a_2 = \begin{pmatrix}0.00767507u^{19}-0.391944u^{18}+\cdots+67.6479u-7.24644\\0.0168279u^{19}-0.503255u^{18}+\cdots+9.40885u-0.118987\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-0.0194671u^{19}-1.23452u^{18}+\cdots+309.121u-35.2533\\1.74036u^{19}-23.1238u^{18}+\cdots+166.693u-14.1659\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-1.77426u^{19}+23.5639u^{18}+\cdots-159.740u+14.8304\\-0.0610127u^{19}-0.487643u^{18}+\cdots+111.512u-11.1602\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-1.77426u^{19}+23.5639u^{18}+\cdots-159.740u+14.8304\\-0.0610127u^{19}-0.487643u^{18}+\cdots+111.512u-11.1602\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{2833789}{1340393}u^{19}+\frac{38974772}{1340393}u^{18}+\cdots-\frac{300276118}{1340393}u+\frac{19362744}{1340393}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{20} - u^{19} + \cdots - 4u + 1$
c_2, c_5	$u^{20} + u^{19} + \cdots + 2u + 1$
c_3	$u^{20} - 14u^{19} + \cdots - 140u + 13$
c_4, c_{10}	$u^{20} - 14u^{19} + \cdots - 2560u + 256$
c_6, c_9	$u^{20} + 9u^{19} + \cdots + 28u + 13$
c_7	$u^{20} + u^{19} + \cdots + 17u + 21$
c_8, c_{11}	$u^{20} - 2u^{19} + \cdots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{20} - 5y^{19} + \cdots - 14y + 1$
c_2, c_5	$y^{20} + 23y^{19} + \cdots + 10y + 1$
c_3	$y^{20} + 4y^{19} + \cdots + 498y + 169$
c_4, c_{10}	$y^{20} + 12y^{19} + \cdots - 65536y + 65536$
c_6, c_9	$y^{20} + 9y^{19} + \cdots + 698y + 169$
c_7	$y^{20} - 19y^{19} + \cdots - 2641y + 441$
c_8, c_{11}	$y^{20} + 20y^{18} + \cdots + 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.643832 + 0.539702I$ $a = -1.74604 + 0.04327I$ $b = 1.14751 + 0.91448I$	$-7.56901 - 4.35325I$	$6.00959 - 2.36650I$
$u = 0.643832 - 0.539702I$ $a = -1.74604 - 0.04327I$ $b = 1.14751 - 0.91448I$	$-7.56901 + 4.35325I$	$6.00959 + 2.36650I$
$u = 1.198930 + 0.321628I$ $a = 0.470312 - 0.608504I$ $b = -0.759582 + 0.578288I$	$0.87661 + 1.80368I$	$-0.33009 - 3.39562I$
$u = 1.198930 - 0.321628I$ $a = 0.470312 + 0.608504I$ $b = -0.759582 - 0.578288I$	$0.87661 - 1.80368I$	$-0.33009 + 3.39562I$
$u = 0.808778 + 1.074790I$ $a = 1.154450 - 0.190358I$ $b = -1.13829 - 1.08683I$	$2.70163 - 8.25419I$	$1.74639 + 5.26030I$
$u = 0.808778 - 1.074790I$ $a = 1.154450 + 0.190358I$ $b = -1.13829 + 1.08683I$	$2.70163 + 8.25419I$	$1.74639 - 5.26030I$
$u = -0.081606 + 0.559081I$ $a = -1.233730 + 0.525348I$ $b = 0.193032 + 0.732624I$	$1.06285 + 1.12930I$	$5.13966 - 4.07834I$
$u = -0.081606 - 0.559081I$ $a = -1.233730 - 0.525348I$ $b = 0.193032 - 0.732624I$	$1.06285 - 1.12930I$	$5.13966 + 4.07834I$
$u = 0.80616 + 1.24885I$ $a = -0.724968 - 0.008424I$ $b = 0.573922 + 0.912168I$	$6.49001 - 1.26443I$	$4.97798 + 1.96291I$
$u = 0.80616 - 1.24885I$ $a = -0.724968 + 0.008424I$ $b = 0.573922 - 0.912168I$	$6.49001 + 1.26443I$	$4.97798 - 1.96291I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.01334 + 1.17077I$ $a = -1.029040 + 0.119371I$ $b = 1.18252 + 1.08380I$	$1.5683 - 15.8169I$	$-0.23034 + 8.70601I$
$u = 1.01334 - 1.17077I$ $a = -1.029040 - 0.119371I$ $b = 1.18252 - 1.08380I$	$1.5683 + 15.8169I$	$-0.23034 - 8.70601I$
$u = 0.307600 + 0.248640I$ $a = 2.41339 + 0.42231I$ $b = -0.637356 - 0.729970I$	$-0.01507 - 1.86524I$	$0.60762 + 4.36679I$
$u = 0.307600 - 0.248640I$ $a = 2.41339 - 0.42231I$ $b = -0.637356 + 0.729970I$	$-0.01507 + 1.86524I$	$0.60762 - 4.36679I$
$u = -0.34327 + 1.61845I$ $a = 0.214787 + 0.114493I$ $b = 0.259032 - 0.308320I$	$-4.19435 + 1.15765I$	$2.14031 - 7.95914I$
$u = -0.34327 - 1.61845I$ $a = 0.214787 - 0.114493I$ $b = 0.259032 + 0.308320I$	$-4.19435 - 1.15765I$	$2.14031 + 7.95914I$
$u = 1.15645 + 1.28057I$ $a = 0.604483 + 0.080235I$ $b = -0.596309 - 0.866871I$	$5.15014 - 7.97058I$	$2.89077 + 7.60145I$
$u = 1.15645 - 1.28057I$ $a = 0.604483 - 0.080235I$ $b = -0.596309 + 0.866871I$	$5.15014 + 7.97058I$	$2.89077 - 7.60145I$
$u = 1.48978 + 0.91920I$ $a = -0.277498 + 0.393931I$ $b = 0.775515 - 0.331794I$	$0.50861 + 7.39141I$	$-3.95189 - 9.17426I$
$u = 1.48978 - 0.91920I$ $a = -0.277498 - 0.393931I$ $b = 0.775515 + 0.331794I$	$0.50861 - 7.39141I$	$-3.95189 + 9.17426I$

II.
$$\boldsymbol{I_2^u = \langle -a^3u^3+4u^3a^2+\cdots+75a-12,\ -2u^3a+u^3+\cdots-a-6,\ u^4+u^3+u^2-u+1\rangle}$$

(i) Arc colorings

$$a_1 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}a\\\frac{1}{45}a^3u^3-\frac{4}{45}u^3a^2+\cdots-\frac{5}{3}a+\frac{4}{15}\end{pmatrix}$$
$$a_8 = \begin{pmatrix}\frac{1}{45}a^3u^3-\frac{4}{45}u^3a^2+\cdots-\frac{2}{3}a+\frac{4}{15}\\\frac{1}{45}a^3u^3-\frac{4}{45}u^3a^2+\cdots-\frac{5}{3}a+\frac{4}{15}\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0.244444a^3u^3+0.0222222a^2u^3+\cdots+0.666667a-0.0666667\\\frac{7}{15}a^3u^3-\frac{13}{15}u^3a^2+\cdots-a+\frac{3}{5}\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}a^2u\\-0.244444a^3u^3-0.0222222a^2u^3+\cdots+0.333333a-0.933333\end{pmatrix}$$
$$a_5 = \begin{pmatrix}\frac{2}{45}a^3u^3-\frac{8}{45}u^3a^2+\cdots-\frac{1}{3}a+\frac{8}{15}\\-0.244444a^3u^3-0.0222222a^2u^3+\cdots+0.333333a+0.0666667\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-0.688889a^3u^3-0.244444a^2u^3+\cdots-0.333333a-0.266667\\-\frac{4}{9}a^3u^3-\frac{2}{9}u^3a^2+\cdots-\frac{2}{3}a+\frac{2}{3}\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0.288889a^3u^3-0.155556a^2u^3+\cdots-0.666667a+0.466667\\-0.244444a^3u^3-0.0222222a^2u^3+\cdots+0.333333a+0.0666667\end{pmatrix}$$
$$a_6 = \begin{pmatrix}\frac{2}{9}a^3u^3+\frac{1}{9}u^3a^2+\cdots+\frac{1}{3}a-\frac{1}{3}\\0.177778a^3u^3-0.711111a^2u^3+\cdots-0.333333a+0.133333\end{pmatrix}$$
$$a_6 = \begin{pmatrix}\frac{2}{9}a^3u^3+\frac{1}{9}u^3a^2+\cdots+\frac{1}{3}a-\frac{1}{3}\\0.177778a^3u^3-0.711111a^2u^3+\cdots-0.333333a+0.133333\end{pmatrix}$$

(ii) Obstruction class $=-1$

(iii) Cusp Shapes $=-\frac{44}{45}a^3u^3-\frac{76}{45}a^3u^2-\frac{4}{45}u^3a^2+\frac{16}{15}a^3u+\frac{124}{45}a^2u^2-\frac{4}{3}u^3a-\frac{52}{45}a^3-\frac{4}{15}a^2u-\frac{8}{3}u^2a+\frac{68}{15}u^3+\frac{28}{45}a^2-4au+\frac{172}{15}u^2+\frac{4}{3}a+\frac{48}{5}u-\frac{26}{15}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{16} + 2u^{15} + \cdots + 10u + 25$
c_2, c_5	$u^{16} - u^{15} + \cdots - 12u + 3$
c_3	$(u^4 + u^3 + u^2 - u + 1)^4$
c_4, c_{10}	$(u^2 + u + 1)^8$
c_6, c_9	$(u^4 - u^3 + u^2 + u + 1)^4$
c_7	$u^{16} - 2u^{15} + \cdots + 264u + 111$
c_8, c_{11}	$u^{16} + u^{15} + \cdots - 12u + 3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{16} + 34y^{14} + \cdots - 4150y + 625$
c_2, c_5	$y^{16} + 3y^{15} + \cdots + 402y + 9$
c_3, c_6, c_9	$(y^4 + y^3 + 5y^2 + y + 1)^4$
c_4, c_{10}	$(y^2 + y + 1)^8$
c_7	$y^{16} - 16y^{15} + \cdots - 83682y + 12321$
c_8, c_{11}	$y^{16} - 5y^{15} + \cdots - 102y + 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.433380 + 0.525827I$ $a = -0.671245 + 0.201645I$ $b = 1.22825 - 1.67883I$	$2.24108 - 6.71592I$	$1.29059 + 13.74348I$
$u = 0.433380 + 0.525827I$ $a = 1.48035 + 0.37541I$ $b = -1.59236 + 0.24028I$	$2.24108 - 2.65615I$	$1.29059 + 6.81528I$
$u = 0.433380 + 0.525827I$ $a = 1.21416 - 2.02760I$ $b = -0.444152 - 0.941106I$	$2.24108 - 2.65615I$	$1.29059 + 6.81528I$
$u = 0.433380 + 0.525827I$ $a = 0.75482 + 2.95796I$ $b = 0.396935 + 0.265570I$	$2.24108 - 6.71592I$	$1.29059 + 13.74348I$
$u = 0.433380 - 0.525827I$ $a = -0.671245 - 0.201645I$ $b = 1.22825 + 1.67883I$	$2.24108 + 6.71592I$	$1.29059 - 13.74348I$
$u = 0.433380 - 0.525827I$ $a = 1.48035 - 0.37541I$ $b = -1.59236 - 0.24028I$	$2.24108 + 2.65615I$	$1.29059 - 6.81528I$
$u = 0.433380 - 0.525827I$ $a = 1.21416 + 2.02760I$ $b = -0.444152 + 0.941106I$	$2.24108 + 2.65615I$	$1.29059 - 6.81528I$
$u = 0.433380 - 0.525827I$ $a = 0.75482 - 2.95796I$ $b = 0.396935 - 0.265570I$	$2.24108 + 6.71592I$	$1.29059 - 13.74348I$
$u = -0.93338 + 1.13249I$ $a = 0.937489 + 0.356410I$ $b = -0.928296 + 1.033700I$	$-2.24108 + 6.71592I$	$-1.29059 - 13.74348I$
$u = -0.93338 + 1.13249I$ $a = -0.945855 - 0.040136I$ $b = 1.27866 - 0.72903I$	$-2.24108 + 6.71592I$	$-1.29059 - 13.74348I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.93338 + 1.13249I$ $a = -0.556441 - 0.371428I$ $b = 0.500964 - 0.132390I$	$-2.24108 + 2.65615I$	$-1.29059 - 6.81528I$
$u = -0.93338 + 1.13249I$ $a = 0.286722 + 0.206045I$ $b = -0.940007 + 0.283478I$	$-2.24108 + 2.65615I$	$-1.29059 - 6.81528I$
$u = -0.93338 - 1.13249I$ $a = 0.937489 - 0.356410I$ $b = -0.928296 - 1.033700I$	$-2.24108 - 6.71592I$	$-1.29059 + 13.74348I$
$u = -0.93338 - 1.13249I$ $a = -0.945855 + 0.040136I$ $b = 1.27866 + 0.72903I$	$-2.24108 - 6.71592I$	$-1.29059 + 13.74348I$
$u = -0.93338 - 1.13249I$ $a = -0.556441 + 0.371428I$ $b = 0.500964 + 0.132390I$	$-2.24108 - 2.65615I$	$-1.29059 + 6.81528I$
$u = -0.93338 - 1.13249I$ $a = 0.286722 - 0.206045I$ $b = -0.940007 - 0.283478I$	$-2.24108 - 2.65615I$	$-1.29059 + 6.81528I$

III. $I_3^u = \langle 25u^{11} + 234u^{10} + \cdots + 167b + 63,\ -63u^{11} - 416u^{10} + \cdots + 167a + 55,\ u^{12} + 7u^{11} + \cdots + u^2 + 1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.377246u^{11} + 2.49102u^{10} + \cdots - 1.97006u - 0.329341 \\ -0.149701u^{11} - 1.40120u^{10} + \cdots - 0.329341u - 0.377246 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.227545u^{11} + 1.08982u^{10} + \cdots - 2.29940u - 0.706587 \\ -0.149701u^{11} - 1.40120u^{10} + \cdots - 0.329341u - 0.377246 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.155689u^{11} - 1.37725u^{10} + \cdots - 1.74251u - 0.832335 \\ 0.221557u^{11} + 1.11377u^{10} + \cdots - 0.712575u - 0.161677 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.119760u^{11} - 1.52096u^{10} + \cdots - 0.263473u - 2.10180 \\ -0.682635u^{11} - 4.26946u^{10} + \cdots - 1.10180u + 0.119760 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -2.01198u^{11} - 12.9521u^{10} + \cdots - 0.826347u + 1.08982 \\ 0.622754u^{11} + 4.50898u^{10} + \cdots - 0.0299401u + 1.32934 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.976048u^{11} - 7.09581u^{10} + \cdots - 4.34731u - 1.17964 \\ -0.173653u^{11} - 1.30539u^{10} + \cdots - 0.982036u + 0.802395 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1.14970u^{11} + 8.40120u^{10} + \cdots + 0.329341u - 0.622754 \\ 0.712575u^{11} + 4.14970u^{10} + \cdots - 0.832335u + 0.155689 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -2.18563u^{11} - 14.2575u^{10} + \cdots - 2.80838u + 0.892216 \\ 0.634731u^{11} + 4.46108u^{10} + \cdots - 0.203593u + 1.23952 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -2.18563u^{11} - 14.2575u^{10} + \cdots - 2.80838u + 0.892216 \\ 0.634731u^{11} + 4.46108u^{10} + \cdots - 0.203593u + 1.23952 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{790}{167}u^{11} - \frac{5023}{167}u^{10} - \frac{17057}{167}u^9 - \frac{34789}{167}u^8 - \frac{43919}{167}u^7 - \frac{28839}{167}u^6 - \frac{2343}{167}u^5 + \frac{9799}{167}u^4 + \frac{2707}{167}u^3 - \frac{263}{167}u^2 + \frac{99}{167}u - \frac{421}{167}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{12} - 2y^{11} + \cdots + 38y + 9$
c_2, c_5	$y^{12} + 2y^{11} + \cdots - 10y + 1$
c_3	$y^{12} + 3y^{11} + \cdots + 2y + 1$
c_4, c_{10}	$y^{12} + 12y^{11} + \cdots + 35y + 9$
c_6, c_9	$y^{12} + 8y^{11} + \cdots + 10y + 1$
c_7	$y^{12} - 4y^{11} + \cdots + 139y + 169$
c_8, c_{11}	$y^{12} - 5y^{11} + \cdots - 12y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.766436+0.608986I$ $a=\;\;1.50954+0.04369I$ $b=-1.18358+0.88580I$	$-7.90320+4.59198I$	$-10.36791-8.72045I$
$u=-0.766436-0.608986I$ $a=\;\;1.50954-0.04369I$ $b=-1.18358-0.88580I$	$-7.90320-4.59198I$	$-10.36791+8.72045I$
$u=-0.99500+1.07131I$ $a=-0.940323-0.168055I$ $b=\;\;1.115660-0.840164I$	$-2.52113+5.90216I$	$-4.45034-3.90745I$
$u=-0.99500-1.07131I$ $a=-0.940323+0.168055I$ $b=\;\;1.115660+0.840164I$	$-2.52113-5.90216I$	$-4.45034+3.90745I$
$u=-1.27015+0.78597I$ $a=-0.549722-0.184546I$ $b=\;\;0.843277-0.197663I$	$-3.20993+2.02643I$	$-9.74479-3.88837I$
$u=-1.27015-0.78597I$ $a=-0.549722+0.184546I$ $b=\;\;0.843277+0.197663I$	$-3.20993-2.02643I$	$-9.74479+3.88837I$
$u=\;\;0.031039+0.489412I$ $a=-1.34512-1.99487I$ $b=\;\;0.934560-0.720234I$	$2.75349+1.52030I$	$2.99434-1.95006I$
$u=\;\;0.031039-0.489412I$ $a=-1.34512+1.99487I$ $b=\;\;0.934560+0.720234I$	$2.75349-1.52030I$	$2.99434+1.95006I$
$u=\;\;0.422290+0.201900I$ $a=-0.80651+1.96505I$ $b=-0.737321+0.666987I$	$2.29385-5.81227I$	$0.92217+3.42975I$
$u=\;\;0.422290-0.201900I$ $a=-0.80651-1.96505I$ $b=-0.737321-0.666987I$	$2.29385+5.81227I$	$0.92217-3.42975I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.92174 + 1.81742I$ $a = 0.132122 + 0.193032I$ $b = -0.472602 + 0.062197I$	$-4.57255 + 1.04234I$	$-18.3535 - 2.2196I$
$u = -0.92174 - 1.81742I$ $a = 0.132122 - 0.193032I$ $b = -0.472602 - 0.062197I$	$-4.57255 - 1.04234I$	$-18.3535 + 2.2196I$

IV.

$\boldsymbol{I^u_4 = \langle u^3 - au + u^2 + b - 1,\ -u^3a - u^3 + \cdots - a - 2,\ u^4 + 2u^3 + 2u^2 + u + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_9 = \begin{pmatrix} a \\ -u^3 + au - u^2 + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^3 + au - u^2 + a + 1 \\ -u^3 + au - u^2 + 1 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} u^3a + u^2a + u^3 + 2u^2 - a + u - 1 \\ -u^2 - u - 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^2a - 2au - u^2 - a - 2u - 1 \\ -u^2 - u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^3a + u^2a + u^3 + u^2 - 2a - u - 2 \\ -a + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^2a - 2au - a - u - 1 \\ -u^2 - u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 2u^2a + 3au + u^2 + 2a + 2u + 2 \\ u^3a + u^2a + au + a + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 2u^2a + 3au + u^2 + 2a + 2u + 2 \\ u^3a + u^2a + au + a + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8 - 2u^7 - 3u^6 + u^5 + 9u^4 + 16u^3 + 14u^2 + 6u + 1$
c_2, c_5	$u^8 + 3u^7 + 6u^6 + 13u^5 + 22u^4 + 27u^3 + 22u^2 + 8u + 1$
c_3	$(u^4 + 2u^3 + 2u^2 + u + 1)^2$
c_4, c_{10}	$(u^2 + u + 1)^4$
c_6, c_9	$(u^4 - 2u^3 + 2u^2 - u + 1)^2$
c_7	$u^8 + 2u^7 - u^6 - 7u^5 - 9u^4 + 12u^2 + 14u + 7$
c_8, c_{11}	$u^8 - 3u^7 + 2u^6 + u^5 + u^3 - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 - 10y^7 + 31y^6 + 37y^5 - 9y^4 - 22y^3 + 22y^2 - 8y + 1$
c_2, c_5	$y^8 + 3y^7 + 2y^6 - 23y^5 + 43y^3 + 96y^2 - 20y + 1$
c_3, c_6, c_9	$(y^4 + 2y^2 + 3y + 1)^2$
c_4, c_{10}	$(y^2 + y + 1)^4$
c_7	$y^8 - 6y^7 + 11y^6 - 7y^5 + 15y^4 - 34y^3 + 18y^2 - 28y + 49$
c_8, c_{11}	$y^8 - 5y^7 + 10y^6 + 5y^5 - 12y^4 + 7y^3 + 4y^2 - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.070696 + 0.758745I$ $a = -1.235260 - 0.133925I$ $b = 1.70673 - 0.62857I$	$3.39192 + 4.62527I$	$7.53952 - 4.38302I$
$u = 0.070696 + 0.758745I$ $a = 0.61352 + 2.30657I$ $b = -0.014287 + 0.946719I$	$3.39192 + 4.62527I$	$7.53952 - 4.38302I$
$u = 0.070696 - 0.758745I$ $a = -1.235260 + 0.133925I$ $b = 1.70673 + 0.62857I$	$3.39192 - 4.62527I$	$7.53952 + 4.38302I$
$u = 0.070696 - 0.758745I$ $a = 0.61352 - 2.30657I$ $b = -0.014287 - 0.946719I$	$3.39192 - 4.62527I$	$7.53952 + 4.38302I$
$u = -1.070700 + 0.758745I$ $a = -0.337294 - 0.598758I$ $b = 0.623004 - 0.162710I$	$-3.39192 + 0.56550I$	$-7.53952 + 2.54518I$
$u = -1.070700 + 0.758745I$ $a = 0.459039 + 0.173330I$ $b = -0.815445 - 0.385168I$	$-3.39192 + 0.56550I$	$-7.53952 + 2.54518I$
$u = -1.070700 - 0.758745I$ $a = -0.337294 + 0.598758I$ $b = 0.623004 + 0.162710I$	$-3.39192 - 0.56550I$	$-7.53952 - 2.54518I$
$u = -1.070700 - 0.758745I$ $a = 0.459039 - 0.173330I$ $b = -0.815445 + 0.385168I$	$-3.39192 - 0.56550I$	$-7.53952 - 2.54518I$

V.

$\boldsymbol{I^u_5 = \langle -u^3 - au - 2u^2 + b - 2u,\ u^2a + a^2 + 2au + 2a - 1,\ u^4 + 2u^3 + 2u^2 + u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8 + u^7 + 3u^6 - 2u^5 + 3u^4 - 5u^3 - 7u^2 + 6u + 7$
c_2, c_5	$u^8 - 3u^7 + 9u^6 - 17u^5 + 25u^4 - 30u^3 + 25u^2 - 16u + 7$
c_3	$(u^4 + 2u^3 + 2u^2 + u + 1)^2$
c_4, c_{10}	$(u^2 + u + 1)^4$
c_6, c_9	$(u^4 - 2u^3 + 2u^2 - u + 1)^2$
c_7	$u^8 - u^7 + 5u^6 - 4u^5 - 3u^4 - 3u^3 + 9u^2 + 2u + 1$
c_8, c_{11}	$u^8 + 3u^7 + 5u^6 + u^5 - 3u^4 - 2u^3 + 9u^2 + 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8+5y^7+19y^6+10y^5-51y^4-y^3+151y^2-134y+49$
c_2, c_5	$y^8+9y^7+29y^6+31y^5-27y^4-68y^3+15y^2+94y+49$
c_3, c_6, c_9	$(y^4+2y^2+3y+1)^2$
c_4, c_{10}	$(y^2+y+1)^4$
c_7	$y^8+9y^7+11y^6-34y^5+81y^4-37y^3+87y^2+14y+1$
c_8, c_{11}	$y^8+y^7+13y^6-y^5+81y^4-56y^3+91y^2+2y+1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.070696 + 0.758745I$ $a = 0.344185 - 0.247546I$ $b = -0.90959 + 1.55027I$	$3.39192 + 0.56550I$	$7.53952 + 2.54518I$
$u = 0.070696 + 0.758745I$ $a = -1.91488 - 1.37722I$ $b = -0.212157 - 0.243648I$	$3.39192 + 0.56550I$	$7.53952 + 2.54518I$
$u = 0.070696 - 0.758745I$ $a = 0.344185 + 0.247546I$ $b = -0.90959 - 1.55027I$	$3.39192 - 0.56550I$	$7.53952 - 2.54518I$
$u = 0.070696 - 0.758745I$ $a = -1.91488 + 1.37722I$ $b = -0.212157 + 0.243648I$	$3.39192 - 0.56550I$	$7.53952 - 2.54518I$
$u = -1.070700 + 0.758745I$ $a = 0.806781 + 0.042368I$ $b = -1.27422 + 1.00737I$	$-3.39192 + 4.62527I$	$-7.53952 - 4.38302I$
$u = -1.070700 + 0.758745I$ $a = -1.236090 + 0.064913I$ $b = 0.895964 - 0.566778I$	$-3.39192 + 4.62527I$	$-7.53952 - 4.38302I$
$u = -1.070700 - 0.758745I$ $a = 0.806781 - 0.042368I$ $b = -1.27422 - 1.00737I$	$-3.39192 - 4.62527I$	$-7.53952 + 4.38302I$
$u = -1.070700 - 0.758745I$ $a = -1.236090 - 0.064913I$ $b = 0.895964 + 0.566778I$	$-3.39192 - 4.62527I$	$-7.53952 + 4.38302I$

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4b - 2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2+u+1)(u^8-2u^7-3u^6+u^5+9u^4+16u^3+14u^2+6u+1)$ $\cdot(u^8+u^7+3u^6-2u^5+3u^4-5u^3-7u^2+6u+7)$ $\cdot(u^{12}-u^{10}+3u^8+3u^7-3u^6+4u^5+2u^4-6u^3+9u^2-4u+3)$ $\cdot(u^{16}+2u^{15}+\cdots+10u+25)(u^{20}-u^{19}+\cdots-4u+1)$
c_2	$(u^2+u+1)(u^8-3u^7+\cdots-16u+7)$ $\cdot(u^8+3u^7+6u^6+13u^5+22u^4+27u^3+22u^2+8u+1)$ $\cdot(u^{12}-2u^{11}+3u^{10}-u^9-u^8+u^7+2u^6-5u^5+8u^4-3u^3-3u^2+2u+1)$ $\cdot(u^{16}-u^{15}+\cdots-12u+3)(u^{20}+u^{19}+\cdots+2u+1)$
c_3	$u^2(u^4+u^3+u^2-u+1)^4(u^4+2u^3+2u^2+u+1)^4$ $\cdot(u^{12}+7u^{11}+\cdots+u^2+1)(u^{20}-14u^{19}+\cdots-140u+13)$
c_4	$(u^2-u+1)(u^2+u+1)^{16}(u^{12}+2u^{11}+\cdots+5u+3)$ $\cdot(u^{20}-14u^{19}+\cdots-2560u+256)$
c_5	$(u^2+u+1)(u^8-3u^7+\cdots-16u+7)$ $\cdot(u^8+3u^7+6u^6+13u^5+22u^4+27u^3+22u^2+8u+1)$ $\cdot(u^{12}+2u^{11}+3u^{10}+u^9-u^8-u^7+2u^6+5u^5+8u^4+3u^3-3u^2-2u+1)$ $\cdot(u^{16}-u^{15}+\cdots-12u+3)(u^{20}+u^{19}+\cdots+2u+1)$
c_6	$u^2(u^4-2u^3+2u^2-u+1)^4(u^4-u^3+u^2+u+1)^4$ $\cdot(u^{12}+4u^{11}+\cdots+5u^2+1)(u^{20}+9u^{19}+\cdots+28u+13)$
c_7	$(u^2+u+1)(u^8-u^7+5u^6-4u^5-3u^4-3u^3+9u^2+2u+1)$ $\cdot(u^8+2u^7-u^6-7u^5-9u^4+12u^2+14u+7)$ $\cdot(u^{12}-2u^{10}+\cdots+11u+13)(u^{16}-2u^{15}+\cdots+264u+111)$ $\cdot(u^{20}+u^{19}+\cdots+17u+21)$
c_8, c_{11}	$(u^2+u+1)(u^8-3u^7+2u^6+u^5+u^3-2u+1)$ $\cdot(u^8+3u^7+5u^6+u^5-3u^4-2u^3+9u^2+4u+1)$ $\cdot(u^{12}+u^{11}+\cdots-2u+1)(u^{16}+u^{15}+\cdots-12u+3)$ $\cdot(u^{20}-2u^{19}+\cdots-4u+1)$
c_9	$u^2(u^4-2u^3+2u^2-u+1)^4(u^4-u^3+u^2+u+1)^4$ $\cdot(u^{12}-4u^{11}+\cdots+5u^2+1)(u^{20}+9u^{19}+\cdots+28u+13)$
c_{10}	$(u^2-u+1)(u^2+u+1)^{16}(u^{12}-2u^{11}+\cdots-5u+3)$ $\cdot(u^{20}-14u^{19}+\cdots-2560u+256)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)(y^8-10y^7+\cdots-8y+1)$ $\cdot(y^8+5y^7+19y^6+10y^5-51y^4-y^3+151y^2-134y+49)$ $\cdot(y^{12}-2y^{11}+\cdots+38y+9)(y^{16}+34y^{14}+\cdots-4150y+625)$ $\cdot(y^{20}-5y^{19}+\cdots-14y+1)$
c_2, c_5	$(y^2+y+1)(y^8+3y^7+2y^6-23y^5+43y^3+96y^2-20y+1)$ $\cdot(y^8+9y^7+29y^6+31y^5-27y^4-68y^3+15y^2+94y+49)$ $\cdot(y^{12}+2y^{11}+\cdots-10y+1)(y^{16}+3y^{15}+\cdots+402y+9)$ $\cdot(y^{20}+23y^{19}+\cdots+10y+1)$
c_3	$y^2(y^4+2y^2+3y+1)^4(y^4+y^3+5y^2+y+1)^4$ $\cdot(y^{12}+3y^{11}+\cdots+2y+1)(y^{20}+4y^{19}+\cdots+498y+169)$
c_4, c_{10}	$((y^2+y+1)^{17})(y^{12}+12y^{11}+\cdots+35y+9)$ $\cdot(y^{20}+12y^{19}+\cdots-65536y+65536)$
c_6, c_9	$y^2(y^4+2y^2+3y+1)^4(y^4+y^3+5y^2+y+1)^4$ $\cdot(y^{12}+8y^{11}+\cdots+10y+1)(y^{20}+9y^{19}+\cdots+698y+169)$
c_7	$(y^2+y+1)(y^8-6y^7+\cdots-28y+49)$ $\cdot(y^8+9y^7+11y^6-34y^5+81y^4-37y^3+87y^2+14y+1)$ $\cdot(y^{12}-4y^{11}+\cdots+139y+169)(y^{16}-16y^{15}+\cdots-83682y+12321)$ $\cdot(y^{20}-19y^{19}+\cdots-2641y+441)$
c_8, c_{11}	$(y^2+y+1)(y^8-5y^7+10y^6+5y^5-12y^4+7y^3+4y^2-4y+1)$ $\cdot(y^8+y^7+13y^6-y^5+81y^4-56y^3+91y^2+2y+1)$ $\cdot(y^{12}-5y^{11}+\cdots-12y+1)(y^{16}-5y^{15}+\cdots-102y+9)$ $\cdot(y^{20}+20y^{18}+\cdots+4y+1)$