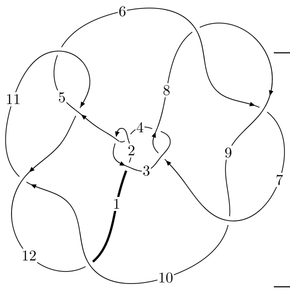
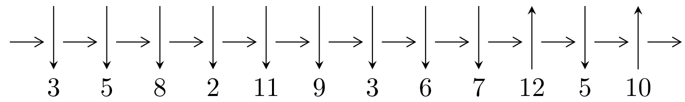
$12n_{0229}$ ($K12n_{0229}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 4.74944 \times 10^{17} u^{17} + 1.40015 \times 10^{18} u^{16} + \cdots + 6.24112 \times 10^{19} d - 1.05622 \times 10^{18}, \\
& -6.60139 \times 10^{16} u^{17} - 1.14793 \times 10^{18} u^{16} + \cdots + 1.24822 \times 10^{20} c + 5.64891 \times 10^{19}, \\
& -5.68457 \times 10^{17} u^{17} - 8.64985 \times 10^{17} u^{16} + \cdots + 1.24822 \times 10^{20} b - 1.55459 \times 10^{19}, \\
& 2.99690 \times 10^{17} u^{17} + 2.72458 \times 10^{17} u^{16} + \cdots + 2.49645 \times 10^{20} a - 2.46906 \times 10^{20},\ u^{18} + 3u^{17} + \cdots + 32u + 3 \\
I_2^u = \langle & 6226u^9 a + 7765u^9 + \cdots - 39596a - 22790,\ 19798u^9 a + 1477u^9 + \cdots - 86484a - 5134, \\
& 1447u^9 a + 65u^9 + \cdots - 7346a - 3206,\ -22391u^9 a + 7563u^9 + \cdots + 121770a - 50482, \\
& u^{10} - u^9 - 7u^8 + 8u^7 + 13u^6 - 14u^5 - 2u^4 - 2u^3 + 13u^2 - 12u + 4 \rangle
\end{aligned}$$

$$\begin{aligned}
I_1^v &= \langle c,\ d + v,\ b,\ a - 1,\ v^2 - v + 1 \rangle \\
I_2^v &= \langle a,\ d + v,\ av + c - v + 1,\ b - 1,\ v^2 - v + 1 \rangle \\
I_3^v &= \langle a,\ d + 1,\ c + a,\ b - 1,\ v + 1 \rangle \\
I_4^v &= \langle a,\ d^2 a - d^2 v - dc + dv + d - v - 1,\ d^2 v^2 - v^2 d - dv + v^2 + 2v + 1, \\
& \quad dca - dcv - da + dv - c^2 + cv - av + 2c - a - 1,\ v^2 dc - v^2 d - v^2 c + v^2 a - cv + 2av + a, \\
& \quad dav + da - dv - cv - c + v + 1,\ c^2 v^2 - v^2 ca + a^2 v^2 - cav - v^2 c + 2a^2 v - v^2 a + a^2 - av + v^2,\ b - 1 \rangle
\end{aligned}$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 43 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

[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.

$$I_1^u = \langle 4.75\times10^{17}u^{17}+1.40\times10^{18}u^{16}+\cdots+6.24\times10^{19}d-1.06\times10^{18},\ -6.60\times10^{16}u^{17}-1.15\times10^{18}u^{16}+\cdots+1.25\times10^{20}c+5.65\times10^{19},\ -5.68\times10^{17}u^{17}-8.65\times10^{17}u^{16}+\cdots+1.25\times10^{20}b-1.55\times10^{19},\ 3.00\times10^{17}u^{17}+2.72\times10^{17}u^{16}+\cdots+2.50\times10^{20}a-2.47\times10^{20},\ u^{18}+3u^{17}+\cdots+32u+32\rangle$$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-0.00120047u^{17}-0.00109138u^{16}+\cdots-0.0893825u+0.989028\\0.00455413u^{17}+0.00692973u^{16}+\cdots+0.245124u+0.124544\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0.000528863u^{17}+0.00919651u^{16}+\cdots+0.525376u-0.452556\\-0.00760992u^{17}-0.0224344u^{16}+\cdots+0.469479u+0.0169236\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-0.00389201u^{17}-0.00712189u^{16}+\cdots+1.21746u+0.120580\\0.00251002u^{17}+0.00451441u^{16}+\cdots+1.02744u+0.0384150\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0.00640203u^{17}+0.0116363u^{16}+\cdots-0.190018u-0.0821645\\0.00251002u^{17}+0.00451441u^{16}+\cdots+1.02744u+0.0384150\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0.0117438u^{17}+0.0288644u^{16}+\cdots-0.134994u-0.795004\\0.00684312u^{17}+0.0134766u^{16}+\cdots+0.331617u+0.354667\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-0.00120047u^{17}-0.00109138u^{16}+\cdots-0.0893825u+0.989028\\-0.00756978u^{17}-0.0124143u^{16}+\cdots-0.287029u-0.204865\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-0.00877025u^{17}-0.0135056u^{16}+\cdots-0.376412u+0.784163\\-0.00756978u^{17}-0.0124143u^{16}+\cdots-0.287029u-0.204865\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0.0131347u^{17}+0.0229449u^{16}+\cdots-0.168830u+0.0635675\\0.00924267u^{17}+0.0158230u^{16}+\cdots+1.04863u+0.184147\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{1881106086253954753}{3120558008305775558 0}u^{17}-\frac{5887773742508132609}{6241116016611551116 0}u^{16}+\cdots-\frac{5726147858273096529 2}{780139502076443889 5}u-\frac{6435508037453021325 6}{780139502076443889 5}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{18} + 29u^{17} + \cdots + 26u + 1$
c_2, c_4, c_6 c_8, c_9	$u^{18} - 5u^{17} + \cdots + 2u - 1$
c_3, c_7	$u^{18} - 3u^{17} + \cdots - 32u + 32$
c_5, c_{11}	$u^{18} - u^{17} + \cdots + 12u + 4$
c_{10}, c_{12}	$u^{18} - 5u^{17} + \cdots + 136u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{18} - 69y^{17} + \cdots - 166y + 1$
c_2, c_4, c_6 c_8, c_9	$y^{18} - 29y^{17} + \cdots - 26y + 1$
c_3, c_7	$y^{18} - 15y^{17} + \cdots - 2048y + 1024$
c_5, c_{11}	$y^{18} + 5y^{17} + \cdots - 136y + 16$
c_{10}, c_{12}	$y^{18} + 17y^{17} + \cdots - 38944y + 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.078440 + 0.216619I$ $a = 0.492205 - 0.156710I$ $b = 0.844681 + 0.587317I$ $c = 1.077070 - 0.430910I$ $d = 1.068210 - 0.698024I$	$-3.61986 - 3.92600I$	$-13.3379 + 5.7849I$
$u = -1.078440 - 0.216619I$ $a = 0.492205 + 0.156710I$ $b = 0.844681 - 0.587317I$ $c = 1.077070 + 0.430910I$ $d = 1.068210 + 0.698024I$	$-3.61986 + 3.92600I$	$-13.3379 - 5.7849I$
$u = 0.709201 + 0.274453I$ $a = 0.515734 + 0.082365I$ $b = 0.890761 - 0.301961I$ $c = 0.436964 + 0.773316I$ $d = -0.097657 - 0.668363I$	$-3.12578 - 1.29944I$	$-14.10514 + 0.79844I$
$u = 0.709201 - 0.274453I$ $a = 0.515734 - 0.082365I$ $b = 0.890761 + 0.301961I$ $c = 0.436964 - 0.773316I$ $d = -0.097657 + 0.668363I$	$-3.12578 + 1.29944I$	$-14.10514 - 0.79844I$
$u = -0.610909 + 0.417338I$ $a = 0.768504 + 0.302779I$ $b = 0.126387 - 0.443779I$ $c = -0.48208 - 1.41304I$ $d = -0.884219 - 0.662050I$	$1.20916 + 1.63680I$	$-1.95124 - 5.83411I$
$u = -0.610909 - 0.417338I$ $a = 0.768504 - 0.302779I$ $b = 0.126387 + 0.443779I$ $c = -0.48208 + 1.41304I$ $d = -0.884219 + 0.662050I$	$1.20916 - 1.63680I$	$-1.95124 + 5.83411I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.555399$ $a = 0.739573$ $b = 0.352132$ $c = -0.371975$ $d = 0.206595$	-0.726383	-14.1310
$u = -0.072203 + 0.503217I$ $a = 1.330050 + 0.161709I$ $b = -0.259101 - 0.090079I$ $c = -0.46842 + 1.35904I$ $d = 0.650071 + 0.333845I$	$-0.39079 - 2.25423I$	$-1.75748 + 3.62098I$
$u = -0.072203 - 0.503217I$ $a = 1.330050 - 0.161709I$ $b = -0.259101 + 0.090079I$ $c = -0.46842 - 1.35904I$ $d = 0.650071 - 0.333845I$	$-0.39079 + 2.25423I$	$-1.75748 - 3.62098I$
$u = -1.83506 + 0.34828I$ $a = -1.318640 - 0.296832I$ $b = -1.72178 + 0.16248I$ $c = 0.10743 + 1.64261I$ $d = 0.76923 + 2.97688I$	$-11.72250 + 5.21750I$	$-12.21552 - 2.94469I$
$u = -1.83506 - 0.34828I$ $a = -1.318640 + 0.296832I$ $b = -1.72178 - 0.16248I$ $c = 0.10743 - 1.64261I$ $d = 0.76923 - 2.97688I$	$-11.72250 - 5.21750I$	$-12.21552 + 2.94469I$
$u = -1.70473 + 1.04671I$ $a = -0.961354 - 0.702659I$ $b = -1.67800 + 0.49555I$ $c = -0.21746 - 1.42452I$ $d = -1.86176 - 2.20079I$	$19.5607 + 13.8899I$	$-13.2954 - 6.2001I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.70473-1.04671I$ $a=-0.961354+0.702659I$ $b=-1.67800-0.49555I$ $c=-0.21746+1.42452I$ $d=-1.86176+2.20079I$	$19.5607-13.8899I$	$-13.2954+6.2001I$
$u=-0.16477+2.05598I$ $a=\ \ 0.354039-0.009486I$ $b=\ \ 1.82253+0.07562I$ $c=-0.653183-0.249237I$ $d=-0.62005+1.30187I$	$-15.4858-3.5329I$	$-13.90580+2.19457I$
$u=-0.16477-2.05598I$ $a=\ \ 0.354039+0.009486I$ $b=\ \ 1.82253-0.07562I$ $c=-0.653183+0.249237I$ $d=-0.62005-1.30187I$	$-15.4858+3.5329I$	$-13.90580-2.19457I$
$u=\ \ 2.12691$ $a=-1.17023$ $b=-1.85453$ $c=\ \ 0.262059$ $d=-0.557378$	-16.6053	-15.4680
$u=\ \ 1.91575+0.96837I$ $a=-0.965214+0.561225I$ $b=-1.77427-0.45020I$ $c=-0.245361+0.187449I$ $d=\ \ 0.651569-0.121506I$	$18.1284-6.9769I$	$-14.6320+1.8700I$
$u=\ \ 1.91575-0.96837I$ $a=-0.965214-0.561225I$ $b=-1.77427+0.45020I$ $c=-0.245361-0.187449I$ $d=\ \ 0.651569+0.121506I$	$18.1284+6.9769I$	$-14.6320-1.8700I$

II. $\boldsymbol{I^u_2 = \langle 6226au^9 + 7765u^9 + \cdots - 3.96 \times 10^4 a - 2.28 \times 10^4,\ 1.98 \times 10^4 au^9 + 1477u^9 + \cdots - 8.65 \times 10^4 a - 5134,\ 1447au^9 + 65u^9 + \cdots - 7346a - 3206,\ -2.24 \times 10^4 au^9 + 7563u^9 + \cdots + 1.22 \times 10^5 a - 5.05 \times 10^4,\ u^{10} - u^9 + \cdots - 12u + 4\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} a \\ -0.422112au^9 - 0.0189615u^9 + \cdots + 2.14294a + 0.935239 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1.44384au^9 - 0.107716u^9 + \cdots + 6.30718a + 0.374417 \\ -0.908110au^9 - 1.13258u^9 + \cdots + 5.77538a + 3.32410 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{3673}{6856}u^9a + \frac{1}{4}u^9 + \cdots - \frac{1823}{3428}a - 3 \\ 1.03574u^9 - 0.613623u^8 + \cdots + 10.7148u - 6.53180 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.535735au^9 + 0.785735u^9 + \cdots + 0.531797a - 3.53180 \\ 1.03574u^9 - 0.613623u^8 + \cdots + 10.7148u - 6.53180 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.663652au^9 - 0.107716u^9 + \cdots + 2.73337a + 0.374417 \\ -0.682614au^9 - 0.637544u^9 + \cdots + 3.66861a + 1.89177 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} a \\ 0.422112au^9 + 0.0189615u^9 + \cdots - 2.14294a - 0.935239 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.422112au^9 + 0.0189615u^9 + \cdots - 1.14294a - 0.935239 \\ 0.422112au^9 + 0.0189615u^9 + \cdots - 2.14294a - 0.935239 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.681009au^9 + 0.785735u^9 + \cdots + 2.22025a - 3.53180 \\ -0.145274au^9 + 1.03574u^9 + \cdots + 1.68845a - 6.53180 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{3875}{1714}u^9 + \frac{183}{1714}u^8 + \frac{26957}{1714}u^7 - \frac{2248}{857}u^6 - \frac{51811}{1714}u^5 - \frac{541}{857}u^4 + \frac{185}{857}u^3 + \frac{9943}{857}u^2 - \frac{27495}{1714}u - \frac{882}{857}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{20} + 19u^{19} + \cdots - 1248u + 256$
c_2, c_4, c_6 c_8, c_9	$u^{20} - 3u^{19} + \cdots + 8u + 16$
c_3, c_7	$(u^{10} + u^9 - 7u^8 - 8u^7 + 13u^6 + 14u^5 - 2u^4 + 2u^3 + 13u^2 + 12u + 4)^2$
c_5, c_{11}	$(u^{10} - 2u^9 + 3u^8 - 2u^7 + 4u^6 - 3u^5 + 3u^4 + 3u^2 - u + 1)^2$
c_{10}, c_{12}	$(u^{10} - 2u^9 + 9u^8 - 14u^7 + 28u^6 - 31u^5 + 35u^4 - 20u^3 + 15u^2 - 5u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{20} - 39y^{19} + \cdots - 4268544y + 65536$
c_2, c_4, c_6 c_8, c_9	$y^{20} - 19y^{19} + \cdots + 1248y + 256$
c_3, c_7	$(y^{10} - 15y^9 + \cdots - 40y + 16)^2$
c_5, c_{11}	$(y^{10} + 2y^9 + 9y^8 + 14y^7 + 28y^6 + 31y^5 + 35y^4 + 20y^3 + 15y^2 + 5y + 1)^2$
c_{10}, c_{12}	$(y^{10} + 14y^9 + \cdots + 5y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.620250 + 0.748934I$ $a = 0.448932 - 0.060647I$ $b = 1.187590 + 0.295523I$ $c = -0.036785 + 1.027380I$ $d = 0.50487 + 1.48189I$	$-4.43566 + 1.46073I$	$-14.6593 - 3.2864I$
$u = -0.620250 + 0.748934I$ $a = -0.77388 - 2.52919I$ $b = -1.110620 + 0.361536I$ $c = -0.84252 + 1.37187I$ $d = 0.746622 + 0.664780I$	$-4.43566 + 1.46073I$	$-14.6593 - 3.2864I$
$u = -0.620250 - 0.748934I$ $a = 0.448932 + 0.060647I$ $b = 1.187590 - 0.295523I$ $c = -0.036785 - 1.027380I$ $d = 0.50487 - 1.48189I$	$-4.43566 - 1.46073I$	$-14.6593 + 3.2864I$
$u = -0.620250 - 0.748934I$ $a = -0.77388 + 2.52919I$ $b = -1.110620 - 0.361536I$ $c = -0.84252 - 1.37187I$ $d = 0.746622 - 0.664780I$	$-4.43566 - 1.46073I$	$-14.6593 + 3.2864I$
$u = 0.793271 + 0.121626I$ $a = 0.549929 + 0.112131I$ $b = 0.745831 - 0.355977I$ $c = -0.79610 - 1.70490I$ $d = -2.03769 - 3.21838I$	$-2.87696 + 2.81207I$	$-12.88002 - 4.64391I$
$u = 0.793271 + 0.121626I$ $a = -4.13892 + 0.99173I$ $b = -1.228490 - 0.054749I$ $c = 3.11748 + 3.57912I$ $d = 0.42416 + 1.44928I$	$-2.87696 + 2.81207I$	$-12.88002 - 4.64391I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.793271 - 0.121626I$ $a = 0.549929 - 0.112131I$ $b = 0.745831 + 0.355977I$ $c = -0.79610 + 1.70490I$ $d = -2.03769 + 3.21838I$	$-2.87696 - 2.81207I$	$-12.88002 + 4.64391I$
$u = 0.793271 - 0.121626I$ $a = -4.13892 - 0.99173I$ $b = -1.228490 + 0.054749I$ $c = 3.11748 - 3.57912I$ $d = 0.42416 - 1.44928I$	$-2.87696 - 2.81207I$	$-12.88002 + 4.64391I$
$u = 0.413972 + 0.524496I$ $a = 0.920372 - 0.380673I$ $b = -0.072202 + 0.383745I$ $c = -1.62004 + 0.89776I$ $d = -0.357634 - 0.319019I$	$-1.39065 + 0.79591I$	$-7.22040 + 0.81155I$
$u = 0.413972 + 0.524496I$ $a = 0.475648 + 0.039205I$ $b = 1.088210 - 0.172121I$ $c = 0.706375 - 0.124338I$ $d = 1.141520 + 0.478061I$	$-1.39065 + 0.79591I$	$-7.22040 + 0.81155I$
$u = 0.413972 - 0.524496I$ $a = 0.920372 + 0.380673I$ $b = -0.072202 - 0.383745I$ $c = -1.62004 - 0.89776I$ $d = -0.357634 + 0.319019I$	$-1.39065 - 0.79591I$	$-7.22040 - 0.81155I$
$u = 0.413972 - 0.524496I$ $a = 0.475648 - 0.039205I$ $b = 1.088210 + 0.172121I$ $c = 0.706375 + 0.124338I$ $d = 1.141520 - 0.478061I$	$-1.39065 - 0.79591I$	$-7.22040 - 0.81155I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.88200 + 0.46774I$ $a = -1.236340 + 0.360963I$ $b = -1.74531 - 0.21760I$ $c = -0.930133 + 0.846762I$ $d = -1.17593 + 1.51598I$	$-12.6890 - 7.4068I$	$-12.74326 + 4.41038I$
$u = 1.88200 + 0.46774I$ $a = 0.385819 - 0.297883I$ $b = 0.623883 + 1.253760I$ $c = 0.399930 - 0.904911I$ $d = 2.14658 - 1.15854I$	$-12.6890 - 7.4068I$	$-12.74326 + 4.41038I$
$u = 1.88200 - 0.46774I$ $a = -1.236340 - 0.360963I$ $b = -1.74531 + 0.21760I$ $c = -0.930133 - 0.846762I$ $d = -1.17593 - 1.51598I$	$-12.6890 + 7.4068I$	$-12.74326 - 4.41038I$
$u = 1.88200 - 0.46774I$ $a = 0.385819 + 0.297883I$ $b = 0.623883 - 1.253760I$ $c = 0.399930 + 0.904911I$ $d = 2.14658 + 1.15854I$	$-12.6890 + 7.4068I$	$-12.74326 - 4.41038I$
$u = -1.96899 + 0.18613I$ $a = -1.262570 - 0.138704I$ $b = -1.78259 + 0.08597I$ $c = -0.815769 + 0.005529I$ $d = -0.287282 + 0.794814I$	$-13.15130 + 0.50253I$	$-13.49701 + 0.08773I$
$u = -1.96899 + 0.18613I$ $a = 0.381016 + 0.259317I$ $b = 0.79370 - 1.22078I$ $c = -0.182431 + 0.386420I$ $d = -1.60521 + 0.16272I$	$-13.15130 + 0.50253I$	$-13.49701 + 0.08773I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.96899 - 0.18613I$ $a = -1.262570 + 0.138704I$ $b = -1.78259 - 0.08597I$ $c = -0.815769 - 0.005529I$ $d = -0.287282 - 0.794814I$	$-13.15130 - 0.50253I$	$-13.49701 - 0.08773I$
$u = -1.96899 - 0.18613I$ $a = \quad 0.381016 - 0.259317I$ $b = \quad 0.79370 + 1.22078I$ $c = -0.182431 - 0.386420I$ $d = -1.60521 - 0.16272I$	$-13.15130 - 0.50253I$	$-13.49701 - 0.08773I$

III. $\boldsymbol{I_1^v = \langle c,\ d+v,\ b,\ a-1,\ v^2-v+1\rangle}$

(i) Arc colorings

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

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

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

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

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

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

$$a_9 = \begin{pmatrix} v-1 \\ -v+1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} v \\ -v \end{pmatrix}$$

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v - 11$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

IV. $I_2^v = \langle a,\ d+v,\ av+c-v+1,\ b-1,\ v^2-v+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.500000 + 0.866025I$		
$a = 0$		
$b = 1.00000$	$-1.64493 + 2.02988I$	$-9.00000 - 3.46410I$
$c = -0.500000 + 0.866025I$		
$d = -0.500000 - 0.866025I$		
$v = 0.500000 - 0.866025I$		
$a = 0$		
$b = 1.00000$	$-1.64493 - 2.02988I$	$-9.00000 + 3.46410I$
$c = -0.500000 - 0.866025I$		
$d = -0.500000 + 0.866025I$		

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(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_6	$u-1$
c_3, c_5, c_7 c_{10}, c_{11}, c_{12}	u
c_4, c_8, c_9	$u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_6, c_8, c_9	$y - 1$
c_3, c_5, c_7 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
$v = -1.00000$		
$a = 0$		
$b = 1.00000$	-3.28987	-12.0000
$c = 0$		
$d = -1.00000$		

VI.

$\boldsymbol{I^v_4 = \langle a,\ -d^2v+dv+\cdots+d-1,\ d^2v^2-dv^2+\cdots+2v+1,\ -cdv+dv+\cdots-a-1,\ cdv^2-dv^2+\cdots+2av+a,\ adv-dv+\cdots-c+1,\ c^2v^2-acv^2+\cdots-av+a^2,\ b-1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= d^2c - d^2 - 2dc + v^2 + 4c - 15$

(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	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = \cdots$ $a = \cdots$ $b = \cdots$ $c = \cdots$ $d = \cdots$	$-3.28987 + 2.02988I$	$-12.35599 + 3.42923I$

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u^2(u-1)^3(u^{18}+29u^{17}+\cdots+26u+1)$ $\cdot(u^{20}+19u^{19}+\cdots-1248u+256)$
c_2, c_6	$u^2(u-1)^3(u^{18}-5u^{17}+\cdots+2u-1)(u^{20}-3u^{19}+\cdots+8u+16)$
c_3, c_7	$u^5(u^{10}+u^9+\cdots+12u+4)^2$ $\cdot(u^{18}-3u^{17}+\cdots-32u+32)$
c_4, c_8, c_9	$u^2(u+1)^3(u^{18}-5u^{17}+\cdots+2u-1)(u^{20}-3u^{19}+\cdots+8u+16)$
c_5, c_{11}	$u(u^2-u+1)(u^2+u+1)$ $\cdot(u^{10}-2u^9+3u^8-2u^7+4u^6-3u^5+3u^4+3u^2-u+1)^2$ $\cdot(u^{18}-u^{17}+\cdots+12u+4)$
c_{10}	$u(u^2+u+1)^2$ $\cdot(u^{10}-2u^9+9u^8-14u^7+28u^6-31u^5+35u^4-20u^3+15u^2-5u+1)^2$ $\cdot(u^{18}-5u^{17}+\cdots+136u+16)$
c_{12}	$u(u^2-u+1)^2$ $\cdot(u^{10}-2u^9+9u^8-14u^7+28u^6-31u^5+35u^4-20u^3+15u^2-5u+1)^2$ $\cdot(u^{18}-5u^{17}+\cdots+136u+16)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y^2(y-1)^3(y^{18}-69y^{17}+\cdots-166y+1)$ $\cdot(y^{20}-39y^{19}+\cdots-4268544y+65536)$
c_2, c_4, c_6 c_8, c_9	$y^2(y-1)^3(y^{18}-29y^{17}+\cdots-26y+1)$ $\cdot(y^{20}-19y^{19}+\cdots+1248y+256)$
c_3, c_7	$y^5(y^{10}-15y^9+\cdots-40y+16)^2(y^{18}-15y^{17}+\cdots-2048y+1024)$
c_5, c_{11}	$y(y^2+y+1)^2$ $\cdot(y^{10}+2y^9+9y^8+14y^7+28y^6+31y^5+35y^4+20y^3+15y^2+5y+1)^2$ $\cdot(y^{18}+5y^{17}+\cdots-136y+16)$
c_{10}, c_{12}	$y(y^2+y+1)^2(y^{10}+14y^9+\cdots+5y+1)^2$ $\cdot(y^{18}+17y^{17}+\cdots-38944y+256)$