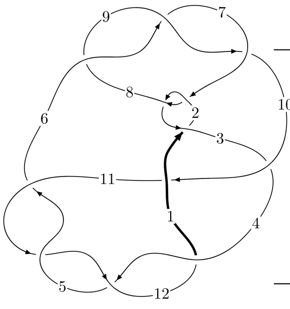
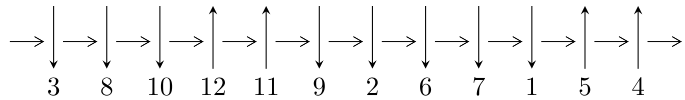
$12a_{0772}$ ($K12a_{0772}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{67} + 2u^{66} + \cdots + b + 1,\ u^{67} + 2u^{66} + \cdots + a + 2,\ u^{68} + 2u^{67} + \cdots + 6u + 1\rangle$$
$$I_2^u = \langle b,\ u^3 + a + 2u,\ u^4 - u^3 + 3u^2 - 2u + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 72 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.

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$$\boldsymbol{I_1^u = \langle u^{67}+2u^{66}+\cdots+b+1,\ u^{67}+2u^{66}+\cdots+a+2,\ u^{68}+2u^{67}+\cdots+6u+1\rangle}$$

(i) Arc colorings

$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_6 = \begin{pmatrix}u^2+1\\-u^4-2u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^{67}-2u^{66}+\cdots-6u-2\\-u^{67}-2u^{66}+\cdots-4u-1\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u^{67}+u^{66}+\cdots+2u+2\\-u^{41}-23u^{39}+\cdots-2u^2-u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u^{67}-3u^{66}+\cdots-8u-3\\-2u^{67}-4u^{66}+\cdots-10u-2\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u^5+2u^3-u\\u^5+3u^3+u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u^{10}-5u^8-6u^6+u^4+u^2+1\\-u^{10}-6u^8-11u^6-6u^4-u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}u^{19}+10u^{17}+38u^{15}+66u^{13}+47u^{11}+4u^9-8u^7-10u^5-3u^3\\u^{19}+11u^{17}+48u^{15}+105u^{13}+121u^{11}+75u^9+30u^7+8u^5+u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= u^{67}+2u^{66}+\cdots-u-9$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{68} + 27u^{67} + \cdots + 1344u + 256$
c_2, c_7	$u^{68} + u^{67} + \cdots - 40u - 16$
c_3	$u^{68} + 2u^{67} + \cdots + 5322u + 1049$
c_4, c_5, c_{11} c_{12}	$u^{68} + 2u^{67} + \cdots + 6u + 1$
c_6, c_8, c_9	$u^{68} - 5u^{67} + \cdots + 6u - 1$
c_{10}	$u^{68} - 18u^{67} + \cdots - 1008u + 49$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{68} + 21y^{67} + \cdots - 1232896y + 65536$
c_2, c_7	$y^{68} - 27y^{67} + \cdots - 1344y + 256$
c_3	$y^{68} - 18y^{67} + \cdots - 32379118y + 1100401$
c_4, c_5, c_{11} c_{12}	$y^{68} + 78y^{67} + \cdots - 6y + 1$
c_6, c_8, c_9	$y^{68} - 59y^{67} + \cdots - 12y + 1$
c_{10}	$y^{68} - 6y^{67} + \cdots - 75166y + 2401$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.197347 + 0.873475I$ $a = -1.89430 + 0.94588I$ $b = -1.68578 - 0.87347I$	$-6.76573 + 5.38396I$	$-12.62780 + 0.I$
$u = -0.197347 - 0.873475I$ $a = -1.89430 - 0.94588I$ $b = -1.68578 + 0.87347I$	$-6.76573 - 5.38396I$	$-12.62780 + 0.I$
$u = -0.400919 + 0.776860I$ $a = -1.74029 + 2.14685I$ $b = -2.54116 - 0.78686I$	$-10.07420 - 3.27035I$	$-14.2388 + 4.5595I$
$u = -0.400919 - 0.776860I$ $a = -1.74029 - 2.14685I$ $b = -2.54116 + 0.78686I$	$-10.07420 + 3.27035I$	$-14.2388 - 4.5595I$
$u = -0.516725 + 0.700827I$ $a = -0.69973 + 2.63609I$ $b = -2.80366 - 0.05209I$	$-4.70584 - 11.85590I$	$-9.20800 + 9.67141I$
$u = -0.516725 - 0.700827I$ $a = -0.69973 - 2.63609I$ $b = -2.80366 + 0.05209I$	$-4.70584 + 11.85590I$	$-9.20800 - 9.67141I$
$u = -0.495876 + 0.679831I$ $a = 0.682404 - 0.604436I$ $b = 1.120320 + 0.179470I$	$0.39345 - 7.62900I$	$-5.28637 + 9.02700I$
$u = -0.495876 - 0.679831I$ $a = 0.682404 + 0.604436I$ $b = 1.120320 - 0.179470I$	$0.39345 + 7.62900I$	$-5.28637 - 9.02700I$
$u = 0.474084 + 0.680555I$ $a = 0.96634 + 3.09061I$ $b = 3.15400 - 0.19444I$	$-2.72085 + 5.66166I$	$-8.20435 - 6.61637I$
$u = 0.474084 - 0.680555I$ $a = 0.96634 - 3.09061I$ $b = 3.15400 + 0.19444I$	$-2.72085 - 5.66166I$	$-8.20435 + 6.61637I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.450615 + 0.661293I$ $a = 0.423151 - 0.930817I$ $b = 0.078954 + 0.208633I$	$-1.99409 - 3.06832I$	$-9.13804 + 6.00596I$
$u = -0.450615 - 0.661293I$ $a = 0.423151 + 0.930817I$ $b = 0.078954 - 0.208633I$	$-1.99409 + 3.06832I$	$-9.13804 - 6.00596I$
$u = 0.481088 + 0.620510I$ $a = -0.751512 - 0.690976I$ $b = -1.050000 + 0.375121I$	$1.64508 + 2.45629I$	$-1.94498 - 3.97918I$
$u = 0.481088 - 0.620510I$ $a = -0.751512 + 0.690976I$ $b = -1.050000 - 0.375121I$	$1.64508 - 2.45629I$	$-1.94498 + 3.97918I$
$u = -0.170138 + 0.764448I$ $a = 0.198071 - 0.774648I$ $b = 0.091517 + 0.187313I$	$-1.56053 + 1.82446I$	$-9.18170 - 2.54653I$
$u = -0.170138 - 0.764448I$ $a = 0.198071 + 0.774648I$ $b = 0.091517 - 0.187313I$	$-1.56053 - 1.82446I$	$-9.18170 + 2.54653I$
$u = 0.532445 + 0.564325I$ $a = -0.388234 - 1.011420I$ $b = 0.050264 + 0.201909I$	$-2.03493 - 0.49893I$	$-8.07852 - 0.03154I$
$u = 0.532445 - 0.564325I$ $a = -0.388234 + 1.011420I$ $b = 0.050264 - 0.201909I$	$-2.03493 + 0.49893I$	$-8.07852 + 0.03154I$
$u = 0.243977 + 0.727217I$ $a = 2.80371 + 1.23958I$ $b = 1.88635 - 1.53609I$	$-4.18607 - 0.03385I$	$-11.57789 - 1.81848I$
$u = 0.243977 - 0.727217I$ $a = 2.80371 - 1.23958I$ $b = 1.88635 + 1.53609I$	$-4.18607 + 0.03385I$	$-11.57789 + 1.81848I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.311198 + 0.686872I$ $a = 0.980284 - 0.595708I$ $b = 0.701988 - 0.150651I$	$-2.94398 - 2.12230I$	$-12.85059 + 5.39939I$
$u = -0.311198 - 0.686872I$ $a = 0.980284 + 0.595708I$ $b = 0.701988 + 0.150651I$	$-2.94398 + 2.12230I$	$-12.85059 - 5.39939I$
$u = 0.563412 + 0.362435I$ $a = -0.247629 - 1.102900I$ $b = 0.277678 + 0.121770I$	$-1.44819 + 4.26469I$	$-5.83422 - 6.54784I$
$u = 0.563412 - 0.362435I$ $a = -0.247629 + 1.102900I$ $b = 0.277678 - 0.121770I$	$-1.44819 - 4.26469I$	$-5.83422 + 6.54784I$
$u = -0.606358 + 0.193080I$ $a = -1.39324 - 1.03510I$ $b = 2.26203 + 0.05493I$	$-3.21668 + 8.03552I$	$-5.98685 - 4.67899I$
$u = -0.606358 - 0.193080I$ $a = -1.39324 + 1.03510I$ $b = 2.26203 - 0.05493I$	$-3.21668 - 8.03552I$	$-5.98685 + 4.67899I$
$u = 0.330146 + 0.517285I$ $a = -0.660081 - 0.413783I$ $b = -0.217944 + 0.480205I$	$-0.032689 + 1.215400I$	$-0.57880 - 5.39464I$
$u = 0.330146 - 0.517285I$ $a = -0.660081 + 0.413783I$ $b = -0.217944 - 0.480205I$	$-0.032689 - 1.215400I$	$-0.57880 + 5.39464I$
$u = -0.561161 + 0.207787I$ $a = 0.337609 + 0.749165I$ $b = -0.707722 + 0.316264I$	$1.76608 + 3.99561I$	$-1.44534 - 3.66904I$
$u = -0.561161 - 0.207787I$ $a = 0.337609 - 0.749165I$ $b = -0.707722 - 0.316264I$	$1.76608 - 3.99561I$	$-1.44534 + 3.66904I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.518120 + 0.292169I$ $a = -0.539528 + 0.663157I$ $b = 0.669029 + 0.534018I$	$2.59858 + 1.02255I$	$0.98197 - 3.38285I$
$u = 0.518120 - 0.292169I$ $a = -0.539528 - 0.663157I$ $b = 0.669029 - 0.534018I$	$2.59858 - 1.02255I$	$0.98197 + 3.38285I$
$u = -0.576388$ $a = -1.92938$ $b = 2.19889$	-7.75399	-9.67190
$u = 0.07796 + 1.43530I$ $a = -0.162067 + 1.034400I$ $b = -0.840024 + 0.237993I$	$-7.09488 + 6.44284I$	0
$u = 0.07796 - 1.43530I$ $a = -0.162067 - 1.034400I$ $b = -0.840024 - 0.237993I$	$-7.09488 - 6.44284I$	0
$u = 0.524636 + 0.189192I$ $a = 1.87813 - 1.35011I$ $b = -2.32094 - 0.02678I$	$-1.30607 - 2.19733I$	$-4.11257 + 1.04166I$
$u = 0.524636 - 0.189192I$ $a = 1.87813 + 1.35011I$ $b = -2.32094 + 0.02678I$	$-1.30607 + 2.19733I$	$-4.11257 - 1.04166I$
$u = 0.03050 + 1.44934I$ $a = 0.083282 - 1.286440I$ $b = -0.069756 - 0.938775I$	$-2.76626 + 2.66512I$	0
$u = 0.03050 - 1.44934I$ $a = 0.083282 + 1.286440I$ $b = -0.069756 + 0.938775I$	$-2.76626 - 2.66512I$	0
$u = -0.01471 + 1.47586I$ $a = 0.02141 + 1.58635I$ $b = 0.899720 + 0.769271I$	$-6.14370 - 1.26145I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.01471 - 1.47586I$ $a = 0.02141 - 1.58635I$ $b = 0.899720 - 0.769271I$	$-6.14370 + 1.26145I$	0
$u = -0.456710 + 0.227741I$ $a = 0.035275 - 1.215450I$ $b = -0.378539 - 0.029211I$	$-0.733539 - 0.161688I$	$-4.49004 - 0.59711I$
$u = -0.456710 - 0.227741I$ $a = 0.035275 + 1.215450I$ $b = -0.378539 + 0.029211I$	$-0.733539 + 0.161688I$	$-4.49004 + 0.59711I$
$u = 0.14519 + 1.54639I$ $a = 0.253403 + 0.483127I$ $b = -0.280463 - 0.206557I$	$-9.06713 + 1.92504I$	0
$u = 0.14519 - 1.54639I$ $a = 0.253403 - 0.483127I$ $b = -0.280463 + 0.206557I$	$-9.06713 - 1.92504I$	0
$u = 0.08880 + 1.56603I$ $a = 0.845921 - 0.221814I$ $b = 0.418511 - 0.710414I$	$-7.19692 + 2.68331I$	0
$u = 0.08880 - 1.56603I$ $a = 0.845921 + 0.221814I$ $b = 0.418511 + 0.710414I$	$-7.19692 - 2.68331I$	0
$u = 0.13443 + 1.57872I$ $a = 1.53855 + 0.40023I$ $b = 1.353120 - 0.222566I$	$-5.78611 + 4.68931I$	0
$u = 0.13443 - 1.57872I$ $a = 1.53855 - 0.40023I$ $b = 1.353120 + 0.222566I$	$-5.78611 - 4.68931I$	0
$u = -0.12937 + 1.59418I$ $a = -0.328067 + 0.224406I$ $b = 0.094922 - 0.452255I$	$-9.65837 - 5.20890I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.12937 - 1.59418I$ $a = -0.328067 - 0.224406I$ $b = 0.094922 + 0.452255I$	$-9.65837 + 5.20890I$	0
$u = -0.08976 + 1.60098I$ $a = -1.30221 + 0.61992I$ $b = -0.936662 + 0.307947I$	$-10.77820 - 3.62355I$	0
$u = -0.08976 - 1.60098I$ $a = -1.30221 - 0.61992I$ $b = -0.936662 - 0.307947I$	$-10.77820 + 3.62355I$	0
$u = -0.14415 + 1.59782I$ $a = -1.49950 + 0.50175I$ $b = -1.43108 - 0.02226I$	$-7.32065 - 10.00200I$	0
$u = -0.14415 - 1.59782I$ $a = -1.49950 - 0.50175I$ $b = -1.43108 + 0.02226I$	$-7.32065 + 10.00200I$	0
$u = 0.13700 + 1.59875I$ $a = -3.57982 - 2.12253I$ $b = -3.78928 + 0.27230I$	$-10.45510 + 7.92717I$	0
$u = 0.13700 - 1.59875I$ $a = -3.57982 + 2.12253I$ $b = -3.78928 - 0.27230I$	$-10.45510 - 7.92717I$	0
$u = -0.06158 + 1.60581I$ $a = -0.295079 - 0.181302I$ $b = -0.063867 - 0.737957I$	$-9.61163 + 0.87781I$	0
$u = -0.06158 - 1.60581I$ $a = -0.295079 + 0.181302I$ $b = -0.063867 + 0.737957I$	$-9.61163 - 0.87781I$	0
$u = 0.07627 + 1.60624I$ $a = -3.85696 + 1.01925I$ $b = -2.50796 + 2.49681I$	$-12.16480 + 1.21091I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.07627 - 1.60624I$ $a = -3.85696 - 1.01925I$ $b = -2.50796 - 2.49681I$	$-12.16480 - 1.21091I$	0
$u = -0.15212 + 1.60475I$ $a = 2.90531 - 1.99256I$ $b = 3.25598 + 0.08173I$	$-12.5124 - 14.3522I$	0
$u = -0.15212 - 1.60475I$ $a = 2.90531 + 1.99256I$ $b = 3.25598 - 0.08173I$	$-12.5124 + 14.3522I$	0
$u = -0.11057 + 1.62515I$ $a = 3.52667 - 0.544454I$ $b = 3.06754 + 1.31578I$	$-18.2927 - 5.1877I$	0
$u = -0.11057 - 1.62515I$ $a = 3.52667 + 0.544454I$ $b = 3.06754 - 1.31578I$	$-18.2927 + 5.1877I$	0
$u = -0.05163 + 1.62908I$ $a = 2.77109 + 0.87233I$ $b = 1.87630 + 1.80364I$	$-15.2957 + 4.4711I$	0
$u = -0.05163 - 1.62908I$ $a = 2.77109 - 0.87233I$ $b = 1.87630 - 1.80364I$	$-15.2957 - 4.4711I$	0
$u = -0.297877$ $a = -0.895338$ $b = -0.465644$	-1.07159	-8.30070

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.395123 + 0.506844I$ $a = -0.547424 - 1.120870I$ $b = 0$	$-1.43393 + 1.41510I$	$-7.52507 - 4.18840I$
$u = 0.395123 - 0.506844I$ $a = -0.547424 + 1.120870I$ $b = 0$	$-1.43393 - 1.41510I$	$-7.52507 + 4.18840I$
$u = 0.10488 + 1.55249I$ $a = 0.547424 + 0.585652I$ $b = 0$	$-8.43568 + 3.16396I$	$-9.97493 - 3.47609I$
$u = 0.10488 - 1.55249I$ $a = 0.547424 - 0.585652I$ $b = 0$	$-8.43568 - 3.16396I$	$-9.97493 + 3.47609I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u^4(u^{68} + 27u^{67} + \cdots + 1344u + 256)$
c_2, c_7	$u^4(u^{68} + u^{67} + \cdots - 40u - 16)$
c_3	$(u^4 - u^3 + u^2 + 1)(u^{68} + 2u^{67} + \cdots + 5322u + 1049)$
c_4, c_5	$(u^4 - u^3 + 3u^2 - 2u + 1)(u^{68} + 2u^{67} + \cdots + 6u + 1)$
c_6	$((u-1)^4)(u^{68} - 5u^{67} + \cdots + 6u - 1)$
c_8, c_9	$((u+1)^4)(u^{68} - 5u^{67} + \cdots + 6u - 1)$
c_{10}	$(u^4 + u^3 + u^2 + 1)(u^{68} - 18u^{67} + \cdots - 1008u + 49)$
c_{11}, c_{12}	$(u^4 + u^3 + 3u^2 + 2u + 1)(u^{68} + 2u^{67} + \cdots + 6u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y^4(y^{68} + 21y^{67} + \cdots - 1232896y + 65536)$
c_2, c_7	$y^4(y^{68} - 27y^{67} + \cdots - 1344y + 256)$
c_3	$(y^4 + y^3 + 3y^2 + 2y + 1)(y^{68} - 18y^{67} + \cdots - 3.23791 \times 10^7 y + 1100401)$
c_4, c_5, c_{11} c_{12}	$(y^4 + 5y^3 + 7y^2 + 2y + 1)(y^{68} + 78y^{67} + \cdots - 6y + 1)$
c_6, c_8, c_9	$((y-1)^4)(y^{68} - 59y^{67} + \cdots - 12y + 1)$
c_{10}	$(y^4 + y^3 + 3y^2 + 2y + 1)(y^{68} - 6y^{67} + \cdots - 75166y + 2401)$