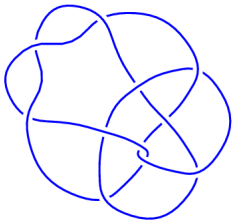
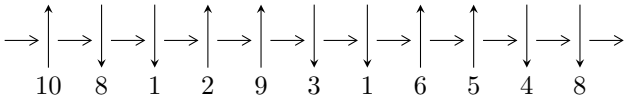
$11n_{155}$ $(K11n_{155})$



[1]

Arc Sequences



Solving Sequence

$$\underset{c_1}{2,10} \to \underset{c_4}{1,5} \to \underset{c_3}{4} \to \underset{c_9}{3} \to \underset{c_5}{9} \to \underset{c_6}{6} \to \underset{c_8}{7} \to \underset{c_{11}}{8} \to 11 \gg c_2, c_7, c_{10}$$

Representation Ideals

$$I = \bigcap_{i=1}^{3} I_i^u$$

$I_1^u = \langle u^9 + u^8 - 3u^6 + 2u^4 + 3u^3 - u^2 - u - 1,\ b + u,\ -u^8 + u^6 + 3u^5 - 3u^4 - 2u^3 - u^2 + a + 3u \rangle$

$I_2^u = \langle u^{16} - 7u^{15} + \cdots - 26u + 7,$

$-5989474225u^{15} + 35317058852u^{14} + \cdots + 7635864529b - 29727831515,$

$34290455046u^{15} - 193768360261u^{14} + \cdots + 53451051703a + 406627298359 \rangle$

$I_3^u = \langle u^{18} - u^{17} + \cdots + 6u + 1,\ b + u,\ 95742u^{17} - 272489u^{16} + \cdots + 148175a + 581762 \rangle$

There are 3 irreducible components with 43 representations.

[1] The knot diagram image is adapter from "C. Livingston and A. H. Moore, KnotInfo: Table of Knot Invariants, http://www.indiana.edu/ knotinfo"

I. $\boldsymbol{I_1^u = \langle u^9+u^8-3u^6+2u^4+3u^3-u^2-u-1,\ b+u,\ -u^8+u^6+3u^5-3u^4-2u^3-u^2+a+3u\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.93778-1.07792I$ $a=-0.869995-0.592754I$ $b=\ \ 0.93778+1.07792I$	$-4.99677+5.78819I$	$-2.01216-5.60852I$
$u=-0.93778+1.07792I$ $a=-0.869995+0.592754I$ $b=\ \ 0.93778-1.07792I$	$-4.99677-5.78819I$	$-2.01216+5.60852I$
$u=-0.704599-0.747798I$ $a=-0.648299+0.197800I$ $b=\ \ 0.704599+0.747798I$	$1.13540+3.06246I$	$3.40537-6.53342I$
$u=-0.704599+0.747798I$ $a=-0.648299-0.197800I$ $b=\ \ 0.704599-0.747798I$	$1.13540-3.06246I$	$3.40537+6.53342I$
$u=-0.291926-0.569978I$ $a=\ \ 1.13307+1.40877I$ $b=\ \ 0.291926+0.569978I$	$-0.857058-0.898737I$	$-7.48049-2.86554I$
$u=-0.291926+0.569978I$ $a=\ \ 1.13307-1.40877I$ $b=\ \ 0.291926-0.569978I$	$-0.857058+0.898737I$	$-7.48049+2.86554I$
$u=\ \ 0.898266$ $a=-0.341074$ $b=-0.898266$	-6.41317	-5.42199
$u=\ \ 0.985174-0.537720I$ $a=\ \ 0.555759-1.205383I$ $b=-0.985174+0.537720I$	$-11.81419+1.53593I$	$-5.20172-0.08744I$
$u=\ \ 0.985174+0.537720I$ $a=\ \ 0.555759+1.205383I$ $b=-0.985174-0.537720I$	$-11.81419-1.53593I$	$-5.20172+0.08744I$

II.

$\boldsymbol{I_2^u = \langle u^{16}-7u^{15}+\cdots-26u+7,\ -5.99\times10^{9}u^{15}+3.53\times10^{10}u^{14}+\cdots+7.64\times10^{9}b-2.97\times10^{10},\ 3.43\times10^{10}u^{15}-1.94\times10^{11}u^{14}+\cdots+5.35\times10^{10}a+4.07\times10^{11}\rangle}$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix}-0.641530u^{15}+3.62516u^{14}+\cdots+13.2090u-7.60747\\0.784387u^{15}-4.62516u^{14}+\cdots-1.49472u+3.89318\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-0.471721u^{15}+3.74197u^{14}+\cdots-39.9962u+11.2928\\1.02789u^{15}-8.41954u^{14}+\cdots+77.8512u-23.2585\end{pmatrix}$$

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

$$a_4 = \begin{pmatrix}-u\\u\end{pmatrix}$$

$$a_3 = \begin{pmatrix}-0.403962u^{15}+3.65834u^{14}+\cdots-57.2020u+14.7733\\2.15783u^{15}-16.6386u^{14}+\cdots+119.703u-31.0972\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-0.641530u^{15}+3.62516u^{14}+\cdots+13.2090u-7.60747\\0.615453u^{15}-3.15412u^{14}+\cdots-19.5084u+9.95207\end{pmatrix}$$

$$a_6 = \begin{pmatrix}0.201611u^{15}-0.883525u^{14}+\cdots-11.2371u+4.30542\\0.452245u^{15}-3.25232u^{14}+\cdots+11.3384u-0.392224\end{pmatrix}$$

$$a_7 = \begin{pmatrix}0.296286u^{15}-2.70439u^{14}+\cdots+52.5692u-12.1830\\-0.151449u^{15}+1.45205u^{14}+\cdots-37.5254u+1.92491\end{pmatrix}$$

$$a_8 = \begin{pmatrix}-0.501789u^{15}+3.29201u^{14}+\cdots-13.2595u+0.897630\\0.335453u^{15}-2.17614u^{14}+\cdots+15.9763u-1.31484\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-0.641530u^{15}+3.62516u^{14}+\cdots+14.2090u-7.60747\\0.784387u^{15}-4.62516u^{14}+\cdots-2.49472u+3.89318\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-0.641530u^{15}+3.62516u^{14}+\cdots+14.2090u-7.60747\\0.784387u^{15}-4.62516u^{14}+\cdots-2.49472u+3.89318\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.81087-1.46236I$ $a=\ \ 0.849619+0.334480I$ $b=-0.559608-0.857499I$	$-6.57974+5.23868I$	$-8.00000-3.04258I$
$u=-0.81087+1.46236I$ $a=\ \ 0.849619-0.334480I$ $b=-0.559608+0.857499I$	$-6.57974-5.23868I$	$-8.00000+3.04258I$
$u=-0.530385-0.793677I$ $a=\ \ 0.814519-0.270987I$ $b=-0.232467-0.600007I$	$0.02985+2.18536I$	$-4.41681-3.14055I$
$u=-0.530385+0.793677I$ $a=\ \ 0.814519+0.270987I$ $b=-0.232467+0.600007I$	$0.02985-2.18536I$	$-4.41681+3.14055I$
$u=\ \ 0.028221-0.727930I$ $a=\ \ 2.08457+0.00686I$ $b=-2.13775-1.37856I$	$-13.18932-2.18536I$	$-11.58319+3.14055I$
$u=\ \ 0.028221+0.727930I$ $a=\ \ 2.08457-0.00686I$ $b=-2.13775+1.37856I$	$-13.18932+2.18536I$	$-11.58319-3.14055I$
$u=\ \ 0.232467-0.600007I$ $a=-1.091833-0.655444I$ $b=\ \ 0.530385-0.793677I$	$0.02985-2.18536I$	$-4.41681+3.14055I$
$u=\ \ 0.232467+0.600007I$ $a=-1.091833+0.655444I$ $b=\ \ 0.530385+0.793677I$	$0.02985+2.18536I$	$-4.41681-3.14055I$
$u=\ \ 0.503866-0.651460I$ $a=\ \ 0.636481-0.057780I$ $b=-1.37934-0.90268I$	$-6.57974-1.04600I$	$-8.00000+6.68545I$
$u=\ \ 0.503866+0.651460I$ $a=\ \ 0.636481+0.057780I$ $b=-1.37934+0.90268I$	$-6.57974+1.04600I$	$-8.00000-6.68545I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.559608 - 0.857499I$ $a = -1.34461 + 0.64449I$ $b = \quad 0.81087 - 1.46236I$	$-6.57974 - 5.23868I$	$-8.00000 + 3.04258I$
$u = \quad 0.559608 + 0.857499I$ $a = -1.34461 - 0.64449I$ $b = \quad 0.81087 + 1.46236I$	$-6.57974 + 5.23868I$	$-8.00000 - 3.04258I$
$u = \quad 1.37934 - 0.90268I$ $a = -0.003729 + 0.319275I$ $b = -0.503866 - 0.651460I$	$-6.57974 + 1.04600I$	$-8.00000 - 6.68545I$
$u = \quad 1.37934 + 0.90268I$ $a = -0.003729 - 0.319275I$ $b = -0.503866 + 0.651460I$	$-6.57974 - 1.04600I$	$-8.00000 + 6.68545I$
$u = \quad 2.13775 - 1.37856I$ $a = -0.302168 + 0.514875I$ $b = -0.028221 - 0.727930I$	$-13.18932 + 2.18536I$	$-11.58319 - 3.14055I$
$u = \quad 2.13775 + 1.37856I$ $a = -0.302168 - 0.514875I$ $b = -0.028221 + 0.727930I$	$-13.18932 - 2.18536I$	$-11.58319 + 3.14055I$

III. $I_3^u = \langle u^{18} - u^{17} + \cdots + 6u + 1,\ b + u,\ 9.57 \times 10^4 u^{17} - 2.72 \times 10^5 u^{16} + \cdots + 1.48 \times 10^5 a + 5.82 \times 10^5 \rangle$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} -0.646141u^{17} + 1.83897u^{16} + \cdots - 18.2110u - 3.92618 \\ -u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1.19283u^{17} + 2.12046u^{16} + \cdots + 0.0493336u + 0.353859 \\ u^2 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.863911u^{17} - 0.546617u^{16} + \cdots + 6.73865u + 1.95620 \\ 0.328915u^{17} - 1.57384u^{16} + \cdots - 7.78799u - 1.31006 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.646141u^{17} + 1.83897u^{16} + \cdots - 18.2110u - 3.92618 \\ -0.927633u^{17} - 0.382426u^{16} + \cdots - 7.51081u - 1.19283 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 2.77863u^{17} - 3.65924u^{16} + \cdots + 13.4316u + 6.10807 \\ -0.392637u^{17} + 0.644798u^{16} + \cdots + 10.0158u + 2.07343 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1.22635u^{17} - 2.06353u^{16} + \cdots + 18.4709u + 6.70072 \\ -0.305969u^{17} + 1.67221u^{16} + \cdots + 15.8621u + 3.25843 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1.55385u^{17} + 1.56547u^{16} + \cdots - 16.1116u - 4.88383 \\ 0.0511355u^{17} - 0.352853u^{16} + \cdots - 8.53170u - 2.08505 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.281491u^{17} + 2.22139u^{16} + \cdots - 11.7002u - 2.73336 \\ -0.927633u^{17} - 0.382426u^{16} + \cdots - 7.51081u - 1.19283 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.281491u^{17} + 2.22139u^{16} + \cdots - 11.7002u - 2.73336 \\ -0.927633u^{17} - 0.382426u^{16} + \cdots - 7.51081u - 1.19283 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.98678-1.23806I$ $a=-0.766575-0.547190I$ $b=\ \ 0.98678+1.23806I$	$-5.88062+4.16437I$	$-5.71584-1.90881I$
$u=-0.98678+1.23806I$ $a=-0.766575+0.547190I$ $b=\ \ 0.98678-1.23806I$	$-5.88062-4.16437I$	$-5.71584+1.90881I$
$u=-0.739762-0.866952I$ $a=-0.410148+0.023946I$ $b=\ \ 0.739762+0.866952I$	$0.25135+2.82287I$	$-6.88072-3.05587I$
$u=-0.739762+0.866952I$ $a=-0.410148-0.023946I$ $b=\ \ 0.739762-0.866952I$	$0.25135-2.82287I$	$-6.88072+3.05587I$
$u=-0.302221-0.080115I$ $a=\ \ 1.67582+2.59626I$ $b=\ \ 0.302221+0.080115I$	$-0.45845+1.47133I$	$-0.00849-6.64687I$
$u=-0.302221+0.080115I$ $a=\ \ 1.67582-2.59626I$ $b=\ \ 0.302221-0.080115I$	$-0.45845-1.47133I$	$-0.00849+6.64687I$
$u=-0.170673-0.568505I$ $a=\ \ 0.774909+0.330314I$ $b=\ \ 0.170673+0.568505I$	$-0.543265+1.120071I$	$-3.86919-5.32416I$
$u=-0.170673+0.568505I$ $a=\ \ 0.774909-0.330314I$ $b=\ \ 0.170673-0.568505I$	$-0.543265-1.120071I$	$-3.86919+5.32416I$
$u=\ \ 0.028471-1.040199I$ $a=-1.52237+0.37502I$ $b=-0.028471+1.040199I$	$-14.5599+1.9312I$	$-9.20699-1.03940I$
$u=\ \ 0.028471+1.040199I$ $a=-1.52237-0.37502I$ $b=-0.028471-1.040199I$	$-14.5599-1.9312I$	$-9.20699+1.03940I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.464186 - 0.991439I$ $a = -0.047637 + 0.952184I$ $b = -0.464186 + 0.991439I$	$-7.77265 - 2.85464I$	$-5.54920 + 2.31741I$
$u = \ 0.464186 + 0.991439I$ $a = -0.047637 - 0.952184I$ $b = -0.464186 - 0.991439I$	$-7.77265 + 2.85464I$	$-5.54920 - 2.31741I$
$u = \ 0.481449 - 0.953626I$ $a = \ 1.250342 - 0.610225I$ $b = -0.481449 + 0.953626I$	$-6.93662 + 0.90661I$	$-5.69894 - 2.68686I$
$u = \ 0.481449 + 0.953626I$ $a = \ 1.250342 + 0.610225I$ $b = -0.481449 - 0.953626I$	$-6.93662 - 0.90661I$	$-5.69894 + 2.68686I$
$u = \ 0.78194 - 1.18447I$ $a = \ 0.693826 + 0.210668I$ $b = -0.78194 + 1.18447I$	$-8.36952 - 8.49029I$	$-4.40486 + 6.13776I$
$u = \ 0.78194 + 1.18447I$ $a = \ 0.693826 - 0.210668I$ $b = -0.78194 - 1.18447I$	$-8.36952 + 8.49029I$	$-4.40486 - 6.13776I$
$u = \ 0.94339 - 1.44899I$ $a = \ 0.851833 - 0.375849I$ $b = -0.94339 + 1.44899I$	$-15.7704 - 12.3848I$	$-6.66577 + 5.56864I$
$u = \ 0.94339 + 1.44899I$ $a = \ 0.851833 + 0.375849I$ $b = -0.94339 - 1.44899I$	$-15.7704 + 12.3848I$	$-6.66577 - 5.56864I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_4	$(u^9-u^8+\cdots-u+1)(u^{16}+7u^{15}+\cdots+26u+7)$ $(u^{18}+u^{17}+\cdots-6u+1)$
c_2	$(u^9-4u^7+\cdots+u^2+1)(u^{16}+u^{15}+\cdots+244u+263)$ $(u^{18}-10u^{16}+\cdots+u+23)$
c_3	$(u^8+7u^7+17u^6+14u^5-u^4+2u^3+6u^2-4u+1)^2$ $(u^9+8u^8+28u^7+59u^6+88u^5+99u^4+83u^3+51u^2+21u+5)$ $(u^{18}-11u^{17}+\cdots-17u+24)$
c_5	$(u^8-u^7+5u^6-4u^5+7u^4-4u^3+2u^2+1)^2$ $(u^9+2u^8+7u^7+10u^6+16u^5+15u^4+12u^3+5u^2-1)$ $(u^{18}+5u^{17}+\cdots+13u+2)$
c_6, c_{11}	$(u^9-u^8+\cdots+3u^2+1)(u^{16}+u^{15}+\cdots-54u+43)$ $(u^{18}-u^{17}+\cdots-u+1)$
c_7	$(u^9+u^8+\cdots-3u^2-1)(u^{16}+u^{15}+\cdots-54u+43)$ $(u^{18}-u^{17}+\cdots-u+1)$
c_8, c_9	$(u^8-u^7+5u^6-4u^5+7u^4-4u^3+2u^2+1)^2$ $(u^9-2u^8+7u^7-10u^6+16u^5-15u^4+12u^3-5u^2+1)$ $(u^{18}+5u^{17}+\cdots+13u+2)$
c_{10}	$(u+1)^{16}(u^9-u^8+u^7+3u^6-2u^5+3u^3-u+1)$ $(u^{18}-16u^{17}+\cdots-1792u+256)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y^9 - y^8 + 6y^7 - 7y^6 + 12y^5 - 8y^4 + 7y^3 - 3y^2 - y - 1)$ $(y^{16} - y^{15} + \cdots + 472y + 49)(y^{18} + 11y^{17} + \cdots - 8y + 1)$
c_2	$(y^9 - 8y^8 + 34y^7 - 78y^6 + 81y^5 - 26y^4 - 7y^3 - 5y^2 - 2y - 1)$ $(y^{16} - 17y^{15} + \cdots - 326744y + 69169)$ $(y^{18} - 20y^{17} + \cdots + 597y + 529)$
c_3	$(y^8 - 15y^7 + 91y^6 - 246y^5 + 207y^4 + 130y^3 + 50y^2 - 4y + 1)^2$ $(y^9 - 8y^8 + 16y^7 + 29y^6 - 64y^5 - 115y^4 - 103y^3 - 105y^2 - 69y - 25)$ $(y^{18} - 23y^{17} + \cdots - 433y + 576)$
c_5, c_8, c_9	$(y^8 + 9y^7 + 31y^6 + 50y^5 + 39y^4 + 22y^3 + 18y^2 + 4y + 1)^2$ $(y^9 + 10y^8 + 41y^7 + 88y^6 + 104y^5 + 63y^4 + 14y^3 + 5y^2 + 10y - 1)$ $(y^{18} + 19y^{17} + \cdots + 47y + 4)$
c_6, c_7, c_{11}	$(y^9 - 7y^8 + 13y^7 - 2y^5 - 14y^4 - 16y^3 - 13y^2 - 6y - 1)$ $(y^{16} - 21y^{15} + \cdots - 8076y + 1849)(y^{18} - 27y^{17} + \cdots - 7y + 1)$
c_{10}	$(y - 1)^{16}(y^9 + y^8 + 3y^7 - 7y^6 + 8y^5 - 12y^4 + 7y^3 - 6y^2 + y - 1)$ $(y^{18} + 70y^{16} + \cdots + 262144y + 65536)$