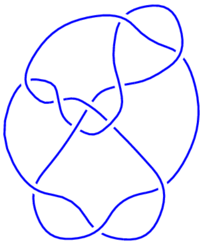
$11n_{117}$ ($K11n_{117}$)



[1]

Arc Sequences

$$\longrightarrow \underset{7}{\uparrow} \longrightarrow \underset{1}{\downarrow} \longrightarrow \underset{8}{\uparrow} \longrightarrow \underset{10}{\downarrow} \longrightarrow \underset{9}{\downarrow} \longrightarrow \underset{2}{\uparrow} \longrightarrow \underset{11}{\downarrow} \longrightarrow \underset{1}{\uparrow} \longrightarrow \underset{5}{\downarrow} \longrightarrow \underset{7}{\downarrow} \longrightarrow \underset{4}{\downarrow} \longrightarrow$$

Solving Sequence

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

Representation Ideals

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

$$I_1^u = \langle u^8 + u^7 - u^6 - u^5 + u^4 - 2u^3 - u^2 + 2u + 1,\ a + 1,\ 5u^7 + 2u^6 - 6u^5 - u^4 + 6u^3 - 13u^2 + b + 3u + 8\rangle$$

$$I_2^u = \langle u^{12} + 3u^{11} + 2u^{10} - 7u^9 - 20u^8 - u^7 + 57u^6 + 27u^5 - 70u^4 - 40u^3 + 42u^2 + 36u + 7,$$
$$72072u^{11} + 189790u^{10} + \cdots + 888545b + 231518,$$
$$6556604u^{11} + 16709340u^{10} + \cdots + 888545a + 103019776\rangle$$

$$I_3^u = \langle u^{13} + u^{12} - 7u^{11} - 7u^{10} + 22u^9 + 18u^8 - 37u^7 - 18u^6 + 31u^5 + 5u^4 - u^3 + 9u^2 - u + 1,\ a - 1,$$
$$94u^{12} - 167u^{11} + \cdots + 1561b + 2486\rangle$$

There are 3 irreducible components with 33 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.
$$I^u_1 = \langle u^8+u^7-u^6-u^5+u^4-2u^3-u^2+2u+1,\ a+1,\ 5u^7+2u^6+\cdots+b+8\rangle$$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1 \\ -5u^7-2u^6+6u^5+u^4-6u^3+13u^2-3u-8 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ 3u^7+u^6-4u^5-u^4+3u^3-8u^2+3u+5 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 5u^7+2u^6-6u^5-u^4+6u^3-13u^2+3u+7 \\ -5u^7-2u^6+6u^5+u^4-6u^3+13u^2-3u-8 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 5u^7+2u^6-6u^5-u^4+6u^3-13u^2+3u+7 \\ -7u^7-3u^6+8u^5+u^4-8u^3+19u^2-4u-11 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 2u^7+u^6-2u^5+2u^3-6u^2+u+4 \\ -2u^7-u^6+2u^5-2u^3+6u^2-u-4 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1 \\ -5u^7-2u^6+6u^5+u^4-6u^3+14u^2-3u-8 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 5u^7+2u^6-6u^5-u^4+6u^3-14u^2+3u+9 \\ -u^7-u^6+u^5+u^4-u^3+2u^2+u-3 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -4u^7-u^6+5u^5-5u^3+12u^2-4u-6 \\ 8u^7+3u^6-10u^5-2u^4+9u^3-22u^2+6u+13 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -4u^7-2u^6+5u^5+2u^4-4u^3+10u^2-2u-7 \\ 2u^7+u^6-3u^5-u^4+3u^3-5u^2+4 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -4u^7-2u^6+5u^5+2u^4-4u^3+10u^2-2u-7 \\ 2u^7+u^6-3u^5-u^4+3u^3-5u^2+4 \end{pmatrix}$$

(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
$u = -1.25100 - 0.69398I$ $a = -1.00000$ $b = -0.950543 - 0.460045I$	$1.36880 - 3.95256I$	$-4.43548 + 5.62596I$
$u = -1.25100 + 0.69398I$ $a = -1.00000$ $b = -0.950543 + 0.460045I$	$1.36880 + 3.95256I$	$-4.43548 - 5.62596I$
$u = -0.611947 - 0.066347I$ $a = -1.00000$ $b = -0.31597 + 1.53684I$	$5.52534 + 1.23864I$	$-6.14816 - 0.14411I$
$u = -0.611947 + 0.066347I$ $a = -1.00000$ $b = -0.31597 - 1.53684I$	$5.52534 - 1.23864I$	$-6.14816 + 0.14411I$
$u = 0.341560 - 1.033288I$ $a = -1.00000$ $b = 0.495908 - 0.252645I$	$-5.09351 - 1.73790I$	$-1.280471 + 0.424799I$
$u = 0.341560 + 1.033288I$ $a = -1.00000$ $b = 0.495908 + 0.252645I$	$-5.09351 + 1.73790I$	$-1.280471 - 0.424799I$
$u = 1.021384 - 0.213700I$ $a = -1.00000$ $b = -0.729400 + 0.802470I$	$-1.80062 + 2.46434I$	$-3.13589 - 4.70044I$
$u = 1.021384 + 0.213700I$ $a = -1.00000$ $b = -0.729400 - 0.802470I$	$-1.80062 - 2.46434I$	$-3.13589 + 4.70044I$

II.

$\boldsymbol{I_2^u = \langle u^{12} + 3u^{11} + \cdots + 36u + 7,\ 7.21 \times 10^4 u^{11} + 1.90 \times 10^5 u^{10} + \cdots + 8.89 \times 10^5 b + 2.32 \times 10^5,\ 6.56 \times 10^6 u^{11} + 1.67 \times 10^7 u^{10} + \cdots + 8.89 \times 10^5 a + 1.03 \times 10^8 \rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} -7.37903u^{11} - 18.8053u^{10} + \cdots - 335.903u - 115.942 \\ -0.0811124u^{11} - 0.213596u^{10} + \cdots - 3.97130u - 0.260559 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -10.2405u^{11} - 26.9108u^{10} + \cdots - 484.537u - 184.723 \\ -2.29311u^{11} - 5.89495u^{10} + \cdots - 104.039u - 36.9707 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -7.29792u^{11} - 18.5917u^{10} + \cdots - 331.931u - 115.682 \\ -0.0811124u^{11} - 0.213596u^{10} + \cdots - 3.97130u - 0.260559 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -7.29792u^{11} - 18.5917u^{10} + \cdots - 331.931u - 115.682 \\ 1.48146u^{11} + 3.67868u^{10} + \cdots + 63.8181u + 22.8540 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 16.7580u^{11} + 42.6418u^{10} + \cdots + 759.709u + 254.261 \\ -0.416600u^{11} - 1.11739u^{10} + \cdots - 20.2427u - 10.1023 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -7.37903u^{11} - 18.8053u^{10} + \cdots - 335.903u - 115.942 \\ 1.45698u^{11} + 3.67361u^{10} + \cdots + 64.3210u + 23.0622 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1.47078u^{11} - 3.43428u^{10} + \cdots - 59.7071u - 12.4125 \\ 1.45698u^{11} + 3.67361u^{10} + \cdots + 64.3210u + 22.0622 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.0138012u^{11} + 0.239329u^{10} + \cdots + 4.61383u + 9.64967 \\ 1.45698u^{11} + 3.67361u^{10} + \cdots + 64.3210u + 22.0622 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 5.89445u^{11} + 15.6103u^{10} + \cdots + 280.809u + 112.179 \\ 1.45698u^{11} + 3.67361u^{10} + \cdots + 64.3210u + 21.0622 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 5.89445u^{11} + 15.6103u^{10} + \cdots + 280.809u + 112.179 \\ 1.45698u^{11} + 3.67361u^{10} + \cdots + 64.3210u + 21.0622 \end{pmatrix}$$

(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
$u = -1.68307 - 0.58734I$ $a = -0.654754 - 0.127174I$ $b = -0.877439 - 0.744862I$	$-1.91067 - 4.85801I$	$-4.49024 + 6.44355I$
$u = -1.68307 + 0.58734I$ $a = -0.654754 + 0.127174I$ $b = -0.877439 + 0.744862I$	$-1.91067 + 4.85801I$	$-4.49024 - 6.44355I$
$u = -0.993753 - 0.194653I$ $a = -1.199426 + 0.616214I$ $b = -0.877439 - 0.744862I$	$-1.91067 - 0.79824I$	$-4.49024 - 0.48465I$
$u = -0.993753 + 0.194653I$ $a = -1.199426 - 0.616214I$ $b = -0.877439 + 0.744862I$	$-1.91067 + 0.79824I$	$-4.49024 + 0.48465I$
$u = -0.73677 - 1.98368I$ $a = 0.083130 - 0.183668I$ $b = 0.754878$	$-6.04826 + 2.02988I$	$-11.01951 - 3.46410I$
$u = -0.73677 + 1.98368I$ $a = 0.083130 + 0.183668I$ $b = 0.754878$	$-6.04826 - 2.02988I$	$-11.01951 + 3.46410I$
$u = -0.425587 - 0.029583I$ $a = 2.04530 + 4.51888I$ $b = 0.754878$	$-6.04826 + 2.02988I$	$-11.01951 - 3.46410I$
$u = -0.425587 + 0.029583I$ $a = 2.04530 - 4.51888I$ $b = 0.754878$	$-6.04826 - 2.02988I$	$-11.01951 + 3.46410I$
$u = 1.027305 - 0.598610I$ $a = -1.47177 - 0.28586I$ $b = -0.877439 + 0.744862I$	$-1.91067 + 4.85801I$	$-4.49024 - 6.44355I$
$u = 1.027305 + 0.598610I$ $a = -1.47177 + 0.28586I$ $b = -0.877439 - 0.744862I$	$-1.91067 - 4.85801I$	$-4.49024 + 6.44355I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 1.311881 - 0.378892I$ $a = -0.659626 - 0.338888I$ $b = -0.877439 - 0.744862I$	$-1.91067 - 0.79824I$	$-4.49024 - 0.48465I$
$u = \quad 1.311881 + 0.378892I$ $a = -0.659626 + 0.338888I$ $b = -0.877439 + 0.744862I$	$-1.91067 + 0.79824I$	$-4.49024 + 0.48465I$

III. $I_3^u = \langle u^{13} + u^{12} + \cdots - u + 1,\ a - 1,\ 94u^{12} - 167u^{11} + \cdots + 1561b + 2486\rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ -0.0602178u^{12} + 0.106983u^{11} + \cdots + 1.43434u - 1.59257 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ -0.167201u^{12} + 0.477899u^{11} + \cdots + 2.65279u - 0.0602178 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0602178u^{12} - 0.106983u^{11} + \cdots - 1.43434u + 2.59257 \\ -0.0602178u^{12} + 0.106983u^{11} + \cdots + 1.43434u - 1.59257 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0602178u^{12} - 0.106983u^{11} + \cdots - 1.43434u + 2.59257 \\ -0.705317u^{12} + 0.199872u^{11} + \cdots + 1.66176u - 1.75977 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.645099u^{12} + 0.0928892u^{11} + \cdots + 0.227418u + 0.832799 \\ 0.476618u^{12} + 0.131967u^{11} + \cdots + 0.392056u - 0.437540 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -0.0602178u^{12} + 0.106983u^{11} + \cdots + 1.43434u - 1.59257 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.0602178u^{12} + 0.106983u^{11} + \cdots + 1.43434u - 0.592569 \\ 1.21525u^{12} + 0.511211u^{11} + \cdots + 0.596413u + 0.479821 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1.15503u^{12} + 0.618193u^{11} + \cdots + 2.03075u - 0.112748 \\ -0.717489u^{12} + 0.295964u^{11} + \cdots + 2.34529u + 0.0672646 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.437540u^{12} + 0.914158u^{11} + \cdots + 4.37604u - 0.0454837 \\ -0.260090u^{12} - 0.367713u^{11} + \cdots - 2.76233u + 0.461883 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.437540u^{12} + 0.914158u^{11} + \cdots + 4.37604u - 0.0454837 \\ -0.260090u^{12} - 0.367713u^{11} + \cdots - 2.76233u + 0.461883 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.59018 - 0.77503I$ $a = 1.00000$ $b = 1.23597 + 1.03056I$	$-10.3151 - 11.3952I$	$-4.67074 + 5.46785I$
$u = -1.59018 + 0.77503I$ $a = 1.00000$ $b = 1.23597 - 1.03056I$	$-10.3151 + 11.3952I$	$-4.67074 - 5.46785I$
$u = -1.342403 - 0.094615I$ $a = 1.00000$ $b = 1.13016 - 1.29050I$	$-9.55616 - 2.72200I$	$-5.53329 + 1.17863I$
$u = -1.342403 + 0.094615I$ $a = 1.00000$ $b = 1.13016 + 1.29050I$	$-9.55616 + 2.72200I$	$-5.53329 - 1.17863I$
$u = -1.12298$ $a = 1.00000$ $b = 0.594830$	-1.85194	-5.42917
$u = 0.019709 - 0.363243I$ $a = 1.00000$ $b = -0.405732 - 0.430962I$	$-0.133748 - 1.066328I$	$-2.25480 + 6.30909I$
$u = 0.019709 + 0.363243I$ $a = 1.00000$ $b = -0.405732 + 0.430962I$	$-0.133748 + 1.066328I$	$-2.25480 - 6.30909I$
$u = 0.196581 - 0.458453I$ $a = 1.00000$ $b = -0.134806 + 1.341745I$	$6.25855 + 1.58741I$	$3.86210 - 4.96482I$
$u = 0.196581 + 0.458453I$ $a = 1.00000$ $b = -0.134806 - 1.341745I$	$6.25855 - 1.58741I$	$3.86210 + 4.96482I$
$u = 1.156155 - 0.636682I$ $a = 1.00000$ $b = 0.679884 - 0.210052I$	$2.05464 + 3.32300I$	$2.35472 - 0.87537I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.156155 + 0.636682I$ $a = 1.00000$ $b = 0.679884 + 0.210052I$	$2.05464 - 3.32300I$	$2.35472 + 0.87537I$
$u = 1.62163 - 0.33100I$ $a = 1.00000$ $b = 1.19711 - 1.14120I$	$-14.5236 + 4.3483I$	$-7.04341 - 2.19507I$
$u = 1.62163 + 0.33100I$ $a = 1.00000$ $b = 1.19711 + 1.14120I$	$-14.5236 - 4.3483I$	$-7.04341 + 2.19507I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^8+4u^6+\cdots-u+1)(u^{12}+u^{11}+\cdots-28u+19)$ $(u^{13}+10u^{11}+\cdots-2u+1)$
c_2	$(u^8+8u^7+26u^6+45u^5+49u^4+35u^3+17u^2+5u+1)$ $(u^{12}+15u^{11}+\cdots+1116u+361)(u^{13}+20u^{12}+\cdots+4u-1)$
c_3, c_6	$(u^8+4u^6+\cdots+u+1)(u^{12}+u^{11}+\cdots-28u+19)$ $(u^{13}+10u^{11}+\cdots-2u+1)$
c_4, c_5, c_9	$(u^2-u+1)^6(u^8+5u^6+8u^4-u^3+5u^2-2u+1)$ $(u^{13}+7u^{12}+\cdots+52u+8)$
c_7, c_{10}	$(u^8-u^7+\cdots-2u+1)(u^{12}+3u^{11}+\cdots+36u+7)$ $(u^{13}+u^{12}+\cdots-u+1)$
c_8	$(u^8+u^7+4u^6+5u^5+3u^4+7u^3+7u^2+2u+1)$ $(u^{12}+u^{11}+\cdots+72u+61)(u^{13}-u^{12}+\cdots-25u+61)$
c_{11}	$(u^3-u^2+1)^4(u^8-3u^7+6u^6-7u^5+4u^4+u^3-2u^2+1)$ $(u^{13}+8u^{12}+\cdots+18u+4)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_3, c_6	$(y^8+8y^7+26y^6+45y^5+49y^4+35y^3+17y^2+5y+1)$ $(y^{12}+15y^{11}+\cdots+1116y+361)(y^{13}+20y^{12}+\cdots+4y-1)$
c_2	$(y^8-12y^7+54y^6-3y^5+57y^4+43y^3+37y^2+9y+1)$ $(y^{12}-29y^{11}+\cdots+1501032y+130321)$ $(y^{13}-56y^{12}+\cdots+56y-1)$
c_4, c_5, c_9	$(y^2+y+1)^6$ $(y^8+10y^7+41y^6+90y^5+116y^4+89y^3+37y^2+6y+1)$ $(y^{13}+11y^{12}+\cdots-176y-64)$
c_7, c_{10}	$(y^8-3y^7+5y^6-y^5-3y^4-4y^3+11y^2-6y+1)$ $(y^{12}-5y^{11}+\cdots-708y+49)(y^{13}-15y^{12}+\cdots-17y-1)$
c_8	$(y^8+7y^7+12y^6-y^5-7y^4-19y^3+27y^2+10y+1)$ $(y^{12}+23y^{11}+\cdots-3964y+3721)$ $(y^{13}+31y^{12}+\cdots+4407y-3721)$
c_{11}	$(y^3-y^2+2y-1)^4(y^8+3y^7+\cdots-4y+1)$ $(y^{13}+2y^{12}+\cdots+76y-16)$