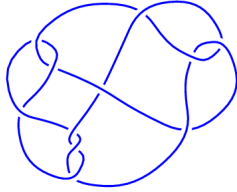
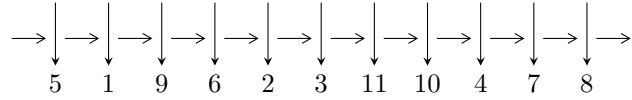


11a₉₄ (K11a₉₄)

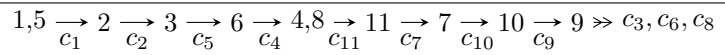


1

Arc Sequences



Solving Sequence



Representation Ideals

$$I = \bigcap_{i=1}^2 I_i^u$$

$$I_1^u = \langle u^3 + u^2 - 1, a + u, b + 1 \rangle$$

$$I_2^u = \langle u^{56} + 2u^{55} + \dots - 5u - 1, u^{55} + u^{54} + \dots + b - 2u, -2u^{55} - 2u^{54} + \dots + a + 5u \rangle$$

There are 2 irreducible components with 59 representations.

¹The knot diagram image is adapter from “C. Livingston and A. H. Moore, KnotInfo: Table of Knot Invariants, <http://www.indiana.edu/~knotinfo>”

$$\mathbf{I. } I_1^u = \langle u^3 + u^2 - 1, a + u, b + 1 \rangle$$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -u \\ u^2 + u - 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

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

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

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

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

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

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

(ii) Obstruction class = 1

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 - 0.744862I$ $a = 0.877439 + 0.744862I$ $b = -1.00000$	$1.37919 - 2.82812I$	$-12.69240 + 3.35914I$
$u = -0.877439 + 0.744862I$ $a = 0.877439 - 0.744862I$ $b = -1.00000$	$1.37919 + 2.82812I$	$-12.69240 - 3.35914I$
$u = 0.754878$ $a = -0.754878$ $b = -1.00000$	-2.75839	-13.6152

II.

$$I_2^u = \langle u^{56} + 2u^{55} + \dots - 5u - 1, u^{55} + u^{54} + \dots + b - 2u, -2u^{55} - 2u^{54} + \dots + a + 5u \rangle$$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 2u^{55} + 2u^{54} + \dots - 9u^2 - 5u \\ -u^{55} - u^{54} + \dots + 4u^2 + 2u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^{55} + u^{54} + \dots - 2u + 1 \\ -u^{55} - u^{54} + \dots + 3u^2 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^7 - 2u^5 + 2u^3 - 2u \\ -u^7 + u^5 - 2u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^{53} - u^{52} + \dots - 2u + 1 \\ -u^{55} - u^{54} + \dots + u^2 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 2u^{55} + 2u^{54} + \dots - 12u^2 - 7u \\ -u^{55} - u^{54} + \dots + 3u^2 + 2u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 2u^{55} + 2u^{54} + \dots - 12u^2 - 7u \\ -u^{55} - u^{54} + \dots + 3u^2 + 2u \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.020321 - 0.734515I$ $a = 0.04100 - 2.72663I$ $b = 1.38707 + 0.36194I$	$-1.2781 - 14.4580I$	$-13.0655 + 9.3880I$
$u = -1.020321 + 0.734515I$ $a = 0.04100 + 2.72663I$ $b = 1.38707 - 0.36194I$	$-1.2781 + 14.4580I$	$-13.0655 - 9.3880I$
$u = -1.011081 - 0.629092I$ $a = 0.61880 - 1.79082I$ $b = 1.45135 + 0.08180I$	$-7.50796 - 6.20957I$	$-17.7806 + 5.6657I$
$u = -1.011081 + 0.629092I$ $a = 0.61880 + 1.79082I$ $b = 1.45135 - 0.08180I$	$-7.50796 + 6.20957I$	$-17.7806 - 5.6657I$
$u = -1.001345 - 0.731261I$ $a = -0.97094 + 1.54866I$ $b = -0.188462 - 0.854305I$	$3.70616 - 10.08220I$	$-9.08620 + 8.29722I$
$u = -1.001345 + 0.731261I$ $a = -0.97094 - 1.54866I$ $b = -0.188462 + 0.854305I$	$3.70616 + 10.08220I$	$-9.08620 - 8.29722I$
$u = -0.999813 - 0.121995I$ $a = -2.33448 + 1.67651I$ $b = -1.302413 - 0.198734I$	$-4.77983 - 2.82843I$	$-17.7591 + 3.4492I$
$u = -0.999813 + 0.121995I$ $a = -2.33448 - 1.67651I$ $b = -1.302413 + 0.198734I$	$-4.77983 + 2.82843I$	$-17.7591 - 3.4492I$
$u = -0.976548 - 0.717252I$ $a = 1.170195 + 0.149875I$ $b = -1.050044 + 0.463708I$	$1.07406 - 5.37584I$	$-12.28023 + 5.19067I$
$u = -0.976548 + 0.717252I$ $a = 1.170195 - 0.149875I$ $b = -1.050044 - 0.463708I$	$1.07406 + 5.37584I$	$-12.28023 - 5.19067I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.975497 - 0.415183I$		
$a = 0.447020 - 0.594020I$	$-5.59879 + 2.28336I$	$-17.3953 - 0.5611I$
$b = 1.372070 - 0.235523I$		
$u = -0.975497 + 0.415183I$		
$a = 0.447020 + 0.594020I$	$-5.59879 - 2.28336I$	$-17.3953 + 0.5611I$
$b = 1.372070 + 0.235523I$		
$u = -0.926349 - 0.631899I$		
$a = -0.28533 + 1.45506I$	$-0.71189 - 4.42421I$	$-14.7302 + 6.6620I$
$b = -0.617027 - 0.535939I$		
$u = -0.926349 + 0.631899I$		
$a = -0.28533 - 1.45506I$	$-0.71189 + 4.42421I$	$-14.7302 - 6.6620I$
$b = -0.617027 + 0.535939I$		
$u = -0.838203 - 0.194478I$		
$a = 0.933411 - 0.319523I$	$-0.691494 - 0.342390I$	$-11.27142 + 0.66679I$
$b = -0.035406 + 0.444835I$		
$u = -0.838203 + 0.194478I$		
$a = 0.933411 + 0.319523I$	$-0.691494 + 0.342390I$	$-11.27142 - 0.66679I$
$b = -0.035406 - 0.444835I$		
$u = -0.810274 - 0.572827I$		
$a = 0.708123 - 0.573558I$	$-0.279032 - 0.387064I$	$-13.17728 - 1.08778I$
$b = -0.448607 + 0.542572I$		
$u = -0.810274 + 0.572827I$		
$a = 0.708123 + 0.573558I$	$-0.279032 + 0.387064I$	$-13.17728 + 1.08778I$
$b = -0.448607 - 0.542572I$		
$u = -0.739197 - 0.772338I$		
$a = 0.98111 + 1.45365I$	$1.79919 - 0.26900I$	$-10.46138 - 0.03325I$
$b = -1.078196 - 0.427394I$		
$u = -0.739197 + 0.772338I$		
$a = 0.98111 - 1.45365I$	$1.79919 + 0.26900I$	$-10.46138 + 0.03325I$
$b = -1.078196 + 0.427394I$		

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.714595 - 0.812869I$ $a = 0.16045 - 1.64532I$ $b = -0.165662 + 0.838312I$	$4.58143 + 4.28016I$	$-7.26827 - 3.33660I$
$u = -0.714595 + 0.812869I$ $a = 0.16045 + 1.64532I$ $b = -0.165662 - 0.838312I$	$4.58143 - 4.28016I$	$-7.26827 + 3.33660I$
$u = -0.693377 - 0.837118I$ $a = -0.96141 + 1.21573I$ $b = 1.37282 - 0.35653I$	$-0.27805 + 8.58003I$	$-11.41057 - 4.73147I$
$u = -0.693377 + 0.837118I$ $a = -0.96141 - 1.21573I$ $b = 1.37282 + 0.35653I$	$-0.27805 - 8.58003I$	$-11.41057 + 4.73147I$
$u = -0.515386 - 0.690878I$ $a = -0.431711 - 0.050629I$ $b = 1.403147 - 0.062138I$	$-6.13819 + 1.16533I$	$-15.6105 - 0.4440I$
$u = -0.515386 + 0.690878I$ $a = -0.431711 + 0.050629I$ $b = 1.403147 + 0.062138I$	$-6.13819 - 1.16533I$	$-15.6105 + 0.4440I$
$u = -0.384829$ $a = 1.08003$ $b = -0.306961$	-0.701749	-14.3127
$u = -0.147937 - 0.676690I$ $a = -0.99255 - 1.29968I$ $b = 1.350786 + 0.293586I$	$-3.10733 - 6.00225I$	$-11.75759 + 5.36126I$
$u = -0.147937 + 0.676690I$ $a = -0.99255 + 1.29968I$ $b = 1.350786 - 0.293586I$	$-3.10733 + 6.00225I$	$-11.75759 - 5.36126I$
$u = -0.091168 - 0.582131I$ $a = 0.20881 + 1.61846I$ $b = -0.140644 - 0.703431I$	$1.60637 - 2.37356I$	$-6.13877 + 4.17137I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.091168 + 0.582131I$ $a = 0.20881 - 1.61846I$ $b = -0.140644 + 0.703431I$	$1.60637 + 2.37356I$	$-6.13877 - 4.17137I$
$u = 0.108234 - 0.462548I$ $a = 0.57063 - 1.94130I$ $b = -1.168005 + 0.209136I$	$-1.37028 + 0.97595I$	$-8.68818 - 0.79639I$
$u = 0.108234 + 0.462548I$ $a = 0.57063 + 1.94130I$ $b = -1.168005 - 0.209136I$	$-1.37028 - 0.97595I$	$-8.68818 + 0.79639I$
$u = 0.715121 - 0.789376I$ $a = 0.55518 + 1.40144I$ $b = -1.296502 - 0.293943I$	$1.30531 - 2.39964I$	$-10.11417 + 0.92609I$
$u = 0.715121 + 0.789376I$ $a = 0.55518 - 1.40144I$ $b = -1.296502 + 0.293943I$	$1.30531 + 2.39964I$	$-10.11417 - 0.92609I$
$u = 0.766602 - 0.798082I$ $a = 0.14417 - 1.49873I$ $b = 0.048164 + 0.710249I$	$5.50599 + 1.24032I$	$-5.23066 - 2.33484I$
$u = 0.766602 + 0.798082I$ $a = 0.14417 + 1.49873I$ $b = 0.048164 - 0.710249I$	$5.50599 - 1.24032I$	$-5.23066 + 2.33484I$
$u = 0.814458 - 0.820893I$ $a = -1.19725 + 1.18760I$ $b = 1.240870 - 0.261920I$	$1.86713 + 4.74693I$	$-11.13065 - 6.47369I$
$u = 0.814458 + 0.820893I$ $a = -1.19725 - 1.18760I$ $b = 1.240870 + 0.261920I$	$1.86713 - 4.74693I$	$-11.13065 + 6.47369I$
$u = 0.871344 - 0.710496I$ $a = 0.272766 + 0.145805I$ $b = 0.316601 + 0.055324I$	$2.47292 + 2.72146I$	$-4.00548 - 3.04642I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.871344 + 0.710496I$ $a = 0.272766 - 0.145805I$ $b = 0.316601 - 0.055324I$	$2.47292 - 2.72146I$	$-4.00548 + 3.04642I$
$u = 0.894478 - 0.590843I$ $a = -1.40632 - 0.81349I$ $b = -1.305334 - 0.049118I$	$-2.36775 + 2.29859I$	$-14.2049 - 3.2578I$
$u = 0.894478 + 0.590843I$ $a = -1.40632 + 0.81349I$ $b = -1.305334 + 0.049118I$	$-2.36775 - 2.29859I$	$-14.2049 + 3.2578I$
$u = 0.943373 - 0.780087I$ $a = -1.280515 + 0.504704I$ $b = 1.225830 + 0.232995I$	$1.47062 + 1.23708I$	$-12.29869 + 1.56441I$
$u = 0.943373 + 0.780087I$ $a = -1.280515 - 0.504704I$ $b = 1.225830 - 0.232995I$	$1.47062 - 1.23708I$	$-12.29869 - 1.56441I$
$u = 0.959869 - 0.079295I$ $a = -0.513055 + 0.027733I$ $b = -0.866172 - 0.412104I$	$-3.84915 + 0.47402I$	$-20.0517 - 1.8006I$
$u = 0.959869 + 0.079295I$ $a = -0.513055 - 0.027733I$ $b = -0.866172 + 0.412104I$	$-3.84915 - 0.47402I$	$-20.0517 + 1.8006I$
$u = 0.966689 - 0.741682I$ $a = 1.06180 + 1.33255I$ $b = 0.086804 - 0.689503I$	$4.89165 + 4.55526I$	$-6.35177 - 3.19659I$
$u = 0.966689 + 0.741682I$ $a = 1.06180 - 1.33255I$ $b = 0.086804 + 0.689503I$	$4.89165 - 4.55526I$	$-6.35177 + 3.19659I$
$u = 0.993432 - 0.720113I$ $a = -0.38582 - 2.89315I$ $b = -1.322477 + 0.285611I$	$0.45930 + 8.10035I$	$-11.87521 - 6.04302I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.993432 + 0.720113I$ $a = -0.38582 + 2.89315I$ $b = -1.322477 - 0.285611I$	$0.45930 - 8.10035I$	$-11.87521 + 6.04302I$
$u = 1.014225 - 0.160741I$ $a = -0.703415 - 0.409672I$ $b = -0.241002 + 0.768489I$	$-1.88523 + 4.71954I$	$-14.7264 - 6.6425I$
$u = 1.014225 + 0.160741I$ $a = -0.703415 + 0.409672I$ $b = -0.241002 - 0.768489I$	$-1.88523 - 4.71954I$	$-14.7264 + 6.6425I$
$u = 1.067777 - 0.171167I$ $a = 1.51270 + 1.49594I$ $b = 1.39495 - 0.31342I$	$-7.07159 + 8.63297I$	$-18.4103 - 6.9711I$
$u = 1.067777 + 0.171167I$ $a = 1.51270 - 1.49594I$ $b = 1.39495 + 0.31342I$	$-7.07159 - 8.63297I$	$-18.4103 + 6.9711I$
$u = 1.07580$ $a = 2.07322$ $b = 1.45795$	-11.3625	-22.1254

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^3 + u^2 - 1)(u^{56} + 2u^{55} + \dots - 5u - 1)$
c_2	$(u^3 + u^2 + 2u + 1)(u^{56} + 18u^{55} + \dots + 5u + 1)$
c_3, c_9	$u^3(u^{56} + u^{55} + \dots - 12u + 8)$
c_4	$(u^3 - u^2 + 2u - 1)(u^{56} + 18u^{55} + \dots + 5u + 1)$
c_5	$(u^3 - u^2 + 1)(u^{56} + 2u^{55} + \dots - 5u - 1)$
c_6	$(u^3 + u^2 + 2u + 1)(u^{56} + 2u^{55} + \dots + 145u - 25)$
c_7	$(u - 1)^3(u^{56} + 4u^{55} + \dots + 2u - 1)$
c_8	$u^3(u^{56} + 21u^{55} + \dots + 592u + 64)$
c_{10}, c_{11}	$(u + 1)^3(u^{56} + 4u^{55} + \dots + 2u - 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5	$(y^3 - y^2 + 2y - 1)(y^{56} - 18y^{55} + \dots - 5y + 1)$
c_2, c_4	$(y^3 + 3y^2 + 2y - 1)(y^{56} + 42y^{55} + \dots - 77y + 1)$
c_3, c_9	$y^3(y^{56} - 21y^{55} + \dots - 592y + 64)$
c_6	$(y^3 + 3y^2 + 2y - 1)(y^{56} + 6y^{55} + \dots + 7275y + 625)$
c_7, c_{10}, c_{11}	$(y - 1)^3(y^{56} - 48y^{55} + \dots - 18y + 1)$
c_8	$y^3(y^{56} + 23y^{55} + \dots - 85248y + 4096)$