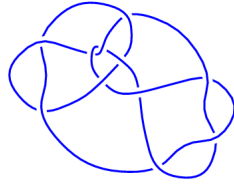
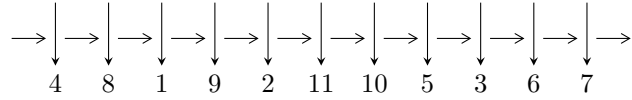


11a₂₉₈ (K11a₂₉₈)

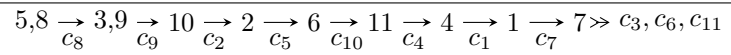


1

Arc Sequences



Solving Sequence



Representation Ideals

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

$$I_1^u = \langle 5u^2 - 5u + 1, b, a + 15u - 10 \rangle$$

$$I_2^u = \langle 5u^{67} - 26u^{66} + \dots + 534u - 9,$$

$$3.39088 \times 10^{442} u^{66} - 1.67941 \times 10^{443} u^{65} + \dots + 8.46140 \times 10^{441} b - 1.07856 \times 10^{443},$$

$$- 1.56641 \times 10^{444} u^{66} + 8.10698 \times 10^{444} u^{65} + \dots + 2.53842 \times 10^{442} a - 2.95737 \times 10^{445} \rangle$$

There are 2 irreducible components with 69 representations.

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

$$\mathbf{I. } I_1^u = \langle 5u^2 - 5u + 1, b, a + 15u - 10 \rangle$$

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} -15u + 10 \\ 0 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} -15u + 10 \\ -2u + 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -13u + 9 \\ -2u + 1 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -11u + 8 \\ -4u + 2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -20u + 15 \\ 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 20u - 14 \\ -1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 17u - 13 \\ 3u - 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 17u - 13 \\ 3u - 2 \end{pmatrix}$$

(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
$u = 0.276393$ $a = 5.85410$ $b = 0$	-10.5276	16.2997
$u = 0.723607$ $a = -0.854102$ $b = 0$	-2.63189	-15.8997

$$\text{II. } I_2^u = \langle 5u^{67} - 26u^{66} + \dots + 534u - 9, 3.39 \times 10^{442}u^{66} - 1.68 \times 10^{443}u^{65} + \dots + 8.46 \times 10^{441}b - 1.08 \times 10^{443}, -1.57 \times 10^{444}u^{66} + 8.11 \times 10^{444}u^{65} + \dots + 2.54 \times 10^{442}a - 2.96 \times 10^{445} \rangle$$

(i) Arc colorings

$$\begin{aligned} a_5 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_8 &= \begin{pmatrix} 61.7081u^{66} - 319.371u^{65} + \dots - 61278.3u + 1165.04 \\ -4.00747u^{66} + 19.8479u^{65} + \dots - 111.747u + 12.7469 \end{pmatrix} \\ a_3 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_9 &= \begin{pmatrix} 61.7081u^{66} - 319.371u^{65} + \dots - 61278.3u + 1165.04 \\ -4.97154u^{66} + 24.5609u^{65} + \dots - 162.049u + 15.4667 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 66.6797u^{66} - 343.932u^{65} + \dots - 61116.3u + 1149.58 \\ -4.97154u^{66} + 24.5609u^{65} + \dots - 162.049u + 15.4667 \end{pmatrix} \\ a_2 &= \begin{pmatrix} 106.901u^{66} - 540.203u^{65} + \dots - 72238.9u + 1391.72 \\ 4.66417u^{66} - 23.5987u^{65} + \dots - 3326.21u + 66.4706 \end{pmatrix} \\ a_6 &= \begin{pmatrix} 62.0936u^{66} - 314.719u^{65} + \dots - 47674.3u + 955.482 \\ 3.30535u^{66} - 16.5919u^{65} + \dots - 1745.48u + 33.1374 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} 106.436u^{66} - 538.983u^{65} + \dots - 64251.9u + 1155.93 \\ 5.64853u^{66} - 29.1245u^{65} + \dots - 6005.95u + 120.410 \end{pmatrix} \\ a_4 &= \begin{pmatrix} 50.0388u^{66} - 257.995u^{65} + \dots - 54633.9u + 1141.76 \\ -16.0771u^{66} + 81.0152u^{65} + \dots + 9881.71u - 188.450 \end{pmatrix} \\ a_1 &= \begin{pmatrix} 106.122u^{66} - 541.179u^{65} + \dots - 91308.2u + 1841.46 \\ -15.2363u^{66} + 76.7013u^{65} + \dots + 8994.51u - 169.502 \end{pmatrix} \\ a_7 &= \begin{pmatrix} -141.235u^{66} + 718.589u^{65} + \dots + 113394.u - 2224.11 \\ 12.5644u^{66} - 63.0421u^{65} + \dots - 6410.64u + 114.660 \end{pmatrix} \\ a_7 &= \begin{pmatrix} -141.235u^{66} + 718.589u^{65} + \dots + 113394.u - 2224.11 \\ 12.5644u^{66} - 63.0421u^{65} + \dots - 6410.64u + 114.660 \end{pmatrix} \end{aligned}$$

(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
$u = -3.73117 - 4.29349I$ $a = -0.145985 - 0.107602I$ $b = 0.347997 + 0.068126I$	$-2.87450 + 2.88828I$	$-34.8061 + 9.5012I$
$u = -3.73117 + 4.29349I$ $a = -0.145985 + 0.107602I$ $b = 0.347997 - 0.068126I$	$-2.87450 - 2.88828I$	$-34.8061 - 9.5012I$
$u = -2.31287 - 0.86712I$ $a = -0.018189 - 0.508046I$ $b = -1.06953 + 1.54069I$	$0.68934 + 9.55585I$	$-10.57407 - 7.64853I$
$u = -2.31287 + 0.86712I$ $a = -0.018189 + 0.508046I$ $b = -1.06953 - 1.54069I$	$0.68934 - 9.55585I$	$-10.57407 + 7.64853I$
$u = -2.23783 - 0.62569I$ $a = -0.018851 + 0.544138I$ $b = 0.87620 - 1.46714I$	$5.66368 + 5.86500I$	$-5.37991 - 6.33692I$
$u = -2.23783 + 0.62569I$ $a = -0.018851 - 0.544138I$ $b = 0.87620 + 1.46714I$	$5.66368 - 5.86500I$	$-5.37991 + 6.33692I$
$u = -2.04240 - 0.24739I$ $a = 0.096001 - 0.617685I$ $b = -0.557568 + 1.295298I$	$3.33579 + 2.19465I$	$-7.86655 - 1.20153I$
$u = -2.04240 + 0.24739I$ $a = 0.096001 + 0.617685I$ $b = -0.557568 - 1.295298I$	$3.33579 - 2.19465I$	$-7.86655 + 1.20153I$
$u = -1.68919 - 0.10893I$ $a = 0.120899 - 0.746930I$ $b = -0.409797 + 0.975823I$	$3.10200 + 2.24588I$	$-7.87626 - 2.77695I$
$u = -1.68919 + 0.10893I$ $a = 0.120899 + 0.746930I$ $b = -0.409797 - 0.975823I$	$3.10200 - 2.24588I$	$-7.87626 + 2.77695I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.52351 - 0.20917I$ $a = -0.210490 - 0.655884I$ $b = 0.623898 + 0.011951I$	$-2.00089 - 2.82137I$	$-12.55288 + 3.14931I$
$u = -1.52351 + 0.20917I$ $a = -0.210490 + 0.655884I$ $b = 0.623898 - 0.011951I$	$-2.00089 + 2.82137I$	$-12.55288 - 3.14931I$
$u = -1.51639 - 2.22961I$ $a = 0.336609 + 0.169455I$ $b = -0.498525 + 0.057019I$	$1.52367 - 0.14015I$	$-14.2937 - 4.2199I$
$u = -1.51639 + 2.22961I$ $a = 0.336609 - 0.169455I$ $b = -0.498525 - 0.057019I$	$1.52367 + 0.14015I$	$-14.2937 + 4.2199I$
$u = -1.47066 - 0.34672I$ $a = -0.384997 - 0.851896I$ $b = -0.046954 + 0.897792I$	$4.46866 + 1.41400I$	$-4.95439 - 4.71232I$
$u = -1.47066 + 0.34672I$ $a = -0.384997 + 0.851896I$ $b = -0.046954 - 0.897792I$	$4.46866 - 1.41400I$	$-4.95439 + 4.71232I$
$u = -1.210455 - 0.604607I$ $a = 0.699565 + 0.876598I$ $b = 0.278039 - 0.784173I$	$-1.18945 + 5.01515I$	$-9.96327 - 7.03774I$
$u = -1.210455 + 0.604607I$ $a = 0.699565 - 0.876598I$ $b = 0.278039 + 0.784173I$	$-1.18945 - 5.01515I$	$-9.96327 + 7.03774I$
$u = -1.081556 - 0.885123I$ $a = 0.309828 + 0.751909I$ $b = 1.255225 - 0.530443I$	$-2.47273 + 2.48121I$	$-12.98455 - 4.26320I$
$u = -1.081556 + 0.885123I$ $a = 0.309828 - 0.751909I$ $b = 1.255225 + 0.530443I$	$-2.47273 - 2.48121I$	$-12.98455 + 4.26320I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.096706 - 0.427933I$ $a = 0.25515 - 1.42081I$ $b = 0.869928 - 0.794145I$	$-2.79764 + 5.70186I$	$-13.9344 - 5.1674I$
$u = -0.096706 + 0.427933I$ $a = 0.25515 + 1.42081I$ $b = 0.869928 + 0.794145I$	$-2.79764 - 5.70186I$	$-13.9344 + 5.1674I$
$u = -0.064801 - 0.310092I$ $a = -0.06664 + 1.98905I$ $b = -0.607828 + 0.763446I$	$1.93198 + 2.14020I$	$-7.90136 - 3.81097I$
$u = -0.064801 + 0.310092I$ $a = -0.06664 - 1.98905I$ $b = -0.607828 - 0.763446I$	$1.93198 - 2.14020I$	$-7.90136 + 3.81097I$
$u = -0.032372 - 0.183662I$ $a = -0.94021 - 3.94300I$ $b = 0.188831 - 0.779818I$	$-1.02190 - 1.39824I$	$-10.01705 + 1.69482I$
$u = -0.032372 + 0.183662I$ $a = -0.94021 + 3.94300I$ $b = 0.188831 + 0.779818I$	$-1.02190 + 1.39824I$	$-10.01705 - 1.69482I$
$u = 0.0845999 - 0.1040022I$ $a = 4.12966 + 7.08001I$ $b = 0.714519 - 0.900643I$	$-1.12210 + 6.34169I$	$-11.92397 - 6.79037I$
$u = 0.0845999 + 0.1040022I$ $a = 4.12966 - 7.08001I$ $b = 0.714519 + 0.900643I$	$-1.12210 - 6.34169I$	$-11.92397 + 6.79037I$
$u = 0.0918053 - 0.0424607I$ $a = -8.94677 - 6.85163I$ $b = -0.517342 + 0.735395I$	$-2.70603 + 1.76569I$	$-13.31586 - 3.73920I$
$u = 0.0918053 + 0.0424607I$ $a = -8.94677 + 6.85163I$ $b = -0.517342 - 0.735395I$	$-2.70603 - 1.76569I$	$-13.31586 + 3.73920I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.107252 - 0.140710I$ $a = -3.13531 - 5.35578I$ $b = -0.878585 + 0.936939I$	$-6.62942 + 10.38302I$	$-16.2511 - 7.0025I$
$u = 0.107252 + 0.140710I$ $a = -3.13531 + 5.35578I$ $b = -0.878585 - 0.936939I$	$-6.62942 - 10.38302I$	$-16.2511 + 7.0025I$
$u = 0.152397 - 0.012670I$ $a = 9.22875 + 1.84584I$ $b = 0.489027 - 0.188184I$	$-10.71131 + 0.03287I$	$-28.8992 - 9.5421I$
$u = 0.152397 + 0.012670I$ $a = 9.22875 - 1.84584I$ $b = 0.489027 + 0.188184I$	$-10.71131 - 0.03287I$	$-28.8992 + 9.5421I$
$u = 0.172680$ $a = -1.92607$ $b = 0.446292$	-0.581693	-17.2428
$u = 0.379154 - 0.936170I$ $a = -1.002764 + 0.032807I$ $b = -1.50133 - 0.43518I$	$0.06257 + 4.19245I$	$-10.29586 - 9.03236I$
$u = 0.379154 + 0.936170I$ $a = -1.002764 - 0.032807I$ $b = -1.50133 + 0.43518I$	$0.06257 - 4.19245I$	$-10.29586 + 9.03236I$
$u = 0.522501 - 0.622361I$ $a = 0.221833 + 0.540376I$ $b = -1.039114 - 0.108043I$	$-5.00722 - 0.73302I$	$-18.4484 + 0.5736I$
$u = 0.522501 + 0.622361I$ $a = 0.221833 - 0.540376I$ $b = -1.039114 + 0.108043I$	$-5.00722 + 0.73302I$	$-18.4484 - 0.5736I$
$u = 0.580142 - 0.565029I$ $a = -1.41683 + 0.35569I$ $b = 0.017649 - 0.777456I$	$-0.49228 - 1.74583I$	$-8.26446 - 1.66020I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.580142 + 0.565029I$ $a = -1.41683 - 0.35569I$ $b = 0.017649 + 0.777456I$	$-0.49228 + 1.74583I$	$-8.26446 + 1.66020I$
$u = 0.66762 - 1.29216I$ $a = 0.694351 - 0.059894I$ $b = 1.75777 + 0.62199I$	$-5.00444 + 7.26595I$	$-15.7529 - 8.7828I$
$u = 0.66762 + 1.29216I$ $a = 0.694351 + 0.059894I$ $b = 1.75777 - 0.62199I$	$-5.00444 - 7.26595I$	$-15.7529 + 8.7828I$
$u = 0.798619 - 0.007050I$ $a = 0.346573 - 1.112496I$ $b = 0.919385 + 0.635252I$	$-1.03011 + 1.52508I$	$-14.1900 - 0.3808I$
$u = 0.798619 + 0.007050I$ $a = 0.346573 + 1.112496I$ $b = 0.919385 - 0.635252I$	$-1.03011 - 1.52508I$	$-14.1900 + 0.3808I$
$u = 1.031232 - 0.374220I$ $a = 0.903112 - 0.771748I$ $b = -0.205934 + 0.898863I$	$4.07626 + 2.45751I$	$-5.53723 - 4.39874I$
$u = 1.031232 + 0.374220I$ $a = 0.903112 + 0.771748I$ $b = -0.205934 - 0.898863I$	$4.07626 - 2.45751I$	$-5.53723 + 4.39874I$
$u = 1.169761 - 0.510774I$ $a = -0.116221 - 0.319509I$ $b = 0.625972 + 0.729951I$	$-1.45952 + 1.07936I$	$-12.77452 - 1.30331I$
$u = 1.169761 + 0.510774I$ $a = -0.116221 + 0.319509I$ $b = 0.625972 - 0.729951I$	$-1.45952 - 1.07936I$	$-12.77452 + 1.30331I$
$u = 1.38161 - 0.78538I$ $a = 0.086114 + 0.337379I$ $b = -0.817959 - 1.112328I$	$-6.38128 + 3.82220I$	$-18.3457 - 1.9018I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.38161 + 0.78538I$ $a = 0.086114 - 0.337379I$ $b = -0.817959 + 1.112328I$	$-6.38128 - 3.82220I$	$-18.3457 + 1.9018I$
$u = 1.44300 - 0.07814I$ $a = -0.480392 + 0.817409I$ $b = 0.435757 - 1.009455I$	$1.33655 + 6.86297I$	$-10.02668 - 7.94684I$
$u = 1.44300 + 0.07814I$ $a = -0.480392 - 0.817409I$ $b = 0.435757 + 1.009455I$	$1.33655 - 6.86297I$	$-10.02668 + 7.94684I$
$u = 1.47905 - 0.82478I$ $a = -0.051038 + 0.862312I$ $b = -0.893626 - 0.834525I$	$-7.03449 - 6.70275I$	$-16.2956 + 5.6811I$
$u = 1.47905 + 0.82478I$ $a = -0.051038 - 0.862312I$ $b = -0.893626 + 0.834525I$	$-7.03449 + 6.70275I$	$-16.2956 - 5.6811I$
$u = 1.51262 - 0.49949I$ $a = -0.374306 + 0.422148I$ $b = -1.11526 - 1.22891I$	$-6.14223 - 0.20744I$	$-18.0429 - 2.0449I$
$u = 1.51262 + 0.49949I$ $a = -0.374306 - 0.422148I$ $b = -1.11526 + 1.22891I$	$-6.14223 + 0.20744I$	$-18.0429 + 2.0449I$
$u = 1.70548 - 0.23609I$ $a = 0.069919 + 0.388090I$ $b = 0.131167 - 1.093020I$	$-1.70121 - 1.12219I$	$-12.55043 + 5.69637I$
$u = 1.70548 + 0.23609I$ $a = 0.069919 - 0.388090I$ $b = 0.131167 + 1.093020I$	$-1.70121 + 1.12219I$	$-12.55043 - 5.69637I$
$u = 1.88727 - 0.36334I$ $a = -0.113959 - 0.343244I$ $b = 0.01503 + 1.52850I$	$-6.71014 - 3.51832I$	$-18.4535 + 5.0158I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.88727 + 0.36334I$ $a = -0.113959 + 0.343244I$ $b = 0.01503 - 1.52850I$	$-6.71014 + 3.51832I$	$-18.4535 - 5.0158I$
$u = 1.94400 - 0.43476I$ $a = -0.154014 - 0.693947I$ $b = 0.783881 + 1.145119I$	$0.61572 - 7.81558I$	$-11.29229 + 4.31786I$
$u = 1.94400 + 0.43476I$ $a = -0.154014 + 0.693947I$ $b = 0.783881 - 1.145119I$	$0.61572 + 7.81558I$	$-11.29229 - 4.31786I$
$u = 2.23210 - 0.58722I$ $a = 0.102144 + 0.606915I$ $b = -0.90969 - 1.26003I$	$2.41609 - 12.25376I$	$-8.96204 + 8.44386I$
$u = 2.23210 + 0.58722I$ $a = 0.102144 - 0.606915I$ $b = -0.90969 + 1.26003I$	$2.41609 + 12.25376I$	$-8.96204 - 8.44386I$
$u = 2.35334 - 0.76098I$ $a = -0.060507 - 0.573901I$ $b = 1.01562 + 1.29138I$	$-2.9681 - 16.2798I$	$-13.1314 + 9.0944I$
$u = 2.35334 + 0.76098I$ $a = -0.060507 + 0.573901I$ $b = 1.01562 - 1.29138I$	$-2.9681 + 16.2798I$	$-13.1314 - 9.0944I$

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u - 1)^2(u^{67} + 3u^{66} + \dots - 11u - 25)$
c_2	$u^2(u^{67} + u^{66} + \dots + 980u + 100)$
c_3	$(u + 1)^2(u^{67} + 3u^{66} + \dots - 11u - 25)$
c_4	$(u^2 + u - 1)(u^{67} + 2u^{66} + \dots + 4u + 1)$
c_5	$(5u^2 + 5u + 1)(5u^{67} + 44u^{66} + \dots + 396u - 27)$
c_6	$(u^2 + u - 1)(u^{67} + 2u^{66} + \dots + 2u + 1)$
c_7	$(u^2 - 3u + 1)(u^{67} + 6u^{66} + \dots - 618u - 117)$
c_8	$(u^2 - u - 1)(u^{67} + 2u^{66} + \dots + 4u + 1)$
c_9	$(5u^2 - 1)(5u^{67} + 27u^{66} + \dots + 819u + 81)$
c_{10}	$(u^2 - u - 1)(u^{67} + 2u^{66} + \dots + 2u + 1)$
c_{11}	$(u^2 - u - 1)(u^{67} + 2u^{66} + \dots + 2u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1	$(y - 1)^2(y^{67} - 39y^{66} + \dots + 25671y - 625)$
c_2	$y^2(y^{67} + 15y^{66} + \dots + 203000y - 10000)$
c_3	$(y - 1)^2(y^{67} - 39y^{66} + \dots + 25671y - 625)$
c_4, c_8	$(y^2 - 3y + 1)(y^{67} + 36y^{66} + \dots + 4y - 1)$
c_5	$(25y^2 - 15y + 1)(25y^{67} + 624y^{66} + \dots + 130896y - 729)$
c_6	$(y^2 - 3y + 1)(y^{67} - 60y^{66} + \dots + 4y - 1)$
c_7	$(y^2 - 7y + 1)(y^{67} + 4y^{66} + \dots + 137160y - 13689)$
c_9	$(5y - 1)^2(25y^{67} - 79y^{66} + \dots - 46413y - 6561)$
c_{10}	$(y^2 - 3y + 1)(y^{67} - 60y^{66} + \dots + 4y - 1)$
c_{11}	$(y^2 - 3y + 1)(y^{67} - 60y^{66} + \dots + 4y - 1)$