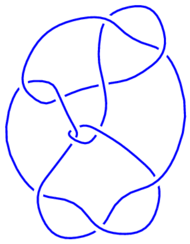
$11n_{68}$ ($K11n_{68}$)



[1]

Arc Sequences

$$\rightarrow \underset{4}{\downarrow} \rightarrow \underset{1}{\downarrow} \rightarrow \underset{7}{\downarrow} \rightarrow \underset{2}{\downarrow} \rightarrow \underset{9}{\uparrow} \rightarrow \underset{11}{\downarrow} \rightarrow \underset{4}{\downarrow} \rightarrow \underset{6}{\uparrow} \rightarrow \underset{5}{\uparrow} \rightarrow \underset{7}{\downarrow} \rightarrow \underset{10}{\uparrow} \rightarrow$$

Solving Sequence

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

Representation Ideals

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

$$\begin{aligned}
I_1^u &= \langle 2u^4 - u^3 - 2u^2 + u + 1,\ -2u^3 + u^2 + b + u,\ 4u^3 - 4u^2 + a - u + 3\rangle \\
I_2^u &= \langle u^9 + 4u^8 + 17u^7 + 31u^6 + 77u^5 + 82u^4 + 133u^3 + 83u^2 + 78u + 23, \\
&\quad - 82u^8 - 272u^7 - 1068u^6 - 1310u^5 - 3438u^4 - 1514u^3 - 2852u^2 + 161b + 209u + 552, \\
&\quad - 42u^8 - 272u^7 - 1050u^6 - 2578u^5 - 4560u^4 - 6936u^3 - 6060u^2 + 161a - 5487u - 1604\rangle \\
I_3^u &= \langle 2u^{26} - u^{25} + \cdots + 9u + 1,\ 2.01218 \times 10^{38}u^{25} - 1.28508 \times 10^{38}u^{24} + \cdots + 3.80976 \times 10^{37}a + 4.07334 \times 10^{38} \\
&\quad 1.76905 \times 10^{39}u^{25} - 1.31030 \times 10^{39}u^{24} + \cdots + 4.76220 \times 10^{39}b + 4.23373 \times 10^{39}\rangle
\end{aligned}$$

There are 3 irreducible components with 39 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. $\boldsymbol{I_1^u = \langle 2u^4 - u^3 - 2u^2 + u + 1,\ -2u^3 + u^2 + b + u,\ 4u^3 - 4u^2 + a - u + 3\rangle}$

(i) Arc colorings

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

(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
$u = -0.677958 - 0.157780I$ $a = -0.89512 + 1.55249I$ $b = -0.278726 - 0.483420I$	$-8.43568 + 3.16396I$	$-14.13894 + 0.11292I$
$u = -0.677958 + 0.157780I$ $a = -0.89512 - 1.55249I$ $b = -0.278726 + 0.483420I$	$-8.43568 - 3.16396I$	$-14.13894 - 0.11292I$
$u = 0.927958 - 0.413327I$ $a = -0.604877 + 0.506844I$ $b = -0.971274 - 0.813859I$	$-1.43393 + 1.41510I$	$-8.73606 - 5.88934I$
$u = 0.927958 + 0.413327I$ $a = -0.604877 - 0.506844I$ $b = -0.971274 + 0.813859I$	$-1.43393 - 1.41510I$	$-8.73606 + 5.88934I$

II. $\boldsymbol{I^u_2 = \langle u^9 + 4u^8 + \cdots + 78u + 23,\ -82u^8 - 272u^7 + \cdots + 161b + 552,\ -42u^8 - 272u^7 + \cdots + 161a - 1604\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.260870u^8 + 1.68944u^7 + \cdots + 34.0807u + 9.96273 \\ 0.509317u^8 + 1.68944u^7 + \cdots - 1.29814u - 3.42857 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 0.273292u^8 + 0.322981u^7 + \cdots - 23.6025u - 8.32298 \\ 0.0124224u^8 - 1.36646u^7 + \cdots - 57.6832u - 18.2857 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.260870u^8 + 1.68944u^7 + \cdots + 34.0807u + 9.96273 \\ 0.0124224u^8 - 1.36646u^7 + \cdots - 57.6832u - 18.2857 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.260870u^8 + 1.68944u^7 + \cdots + 34.0807u + 9.96273 \\ 0.509317u^8 + 1.68944u^7 + \cdots - 1.29814u - 3.42857 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.782609u^7 - 2.91304u^6 + \cdots - 36u - 9.95652 \\ -0.0248447u^8 - 0.695652u^7 + \cdots - 26.0621u - 8 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.273292u^8 + 0.322981u^7 + \cdots - 23.6025u - 8.32298 \\ 0.0124224u^8 - 1.36646u^7 + \cdots - 57.6832u - 18.2857 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.347826u^8 + 1.36646u^7 + \cdots + 5.58385u + 1.06832 \\ 0.322981u^8 + 1.04348u^7 + \cdots - 6.19255u - 4 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.211180u^8 + 0.813665u^7 + \cdots + 60.3292u + 20.3168 \\ -0.0372671u^8 + 0.670807u^7 + \cdots + 31.6211u + 9.28571 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.173913u^8 + 0.142857u^7 + \cdots + 28.7081u + 11.0311 \\ -0.0372671u^8 + 0.670807u^7 + \cdots + 31.6211u + 9.28571 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.173913u^8 + 0.142857u^7 + \cdots + 28.7081u + 11.0311 \\ -0.0372671u^8 + 0.670807u^7 + \cdots + 31.6211u + 9.28571 \end{pmatrix}$$

(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
$u=-1.57125-2.35293I$ $a=\ 0.274306+0.246546I$ $b=\ 2.09456-1.27198I$	-1.11345	-9.01951
$u=-1.57125+2.35293I$ $a=\ 0.274306-0.246546I$ $b=\ 2.09456+1.27198I$	-1.11345	-9.01951
$u=-0.367256$ $a=\ 0.811971$ $b=-0.679356$	-1.11345	-9.01951
$u=-0.119081-1.372090I$ $a=\ 0.055731+0.682092I$ $b=\ 0.1119445-0.0508970I$	$3.02413-2.82812I$	$-2.49024+2.97945I$
$u=-0.119081+1.372090I$ $a=\ 0.055731-0.682092I$ $b=\ 0.1119445+0.0508970I$	$3.02413+2.82812I$	$-2.49024-2.97945I$
$u=-0.116542-1.272428I$ $a=-0.896215-0.514755I$ $b=-1.80661+0.74651I$	$3.02413+2.82812I$	$-2.49024-2.97945I$
$u=-0.116542+1.272428I$ $a=-0.896215+0.514755I$ $b=-1.80661-0.74651I$	$3.02413-2.82812I$	$-2.49024+2.97945I$
$u=-0.00950-1.58939I$ $a=\ 0.855845-0.233161I$ $b=\ 1.93979+0.69232I$	$3.02413+2.82812I$	$-2.49024-2.97945I$
$u=-0.00950+1.58939I$ $a=\ 0.855845+0.233161I$ $b=\ 1.93979-0.69232I$	$3.02413-2.82812I$	$-2.49024+2.97945I$

III. $\boldsymbol{I_3^u =}$
$\boldsymbol{\langle 2u^{26} - u^{25} + \cdots + 9u + 1,\ 2.01 \times 10^{38} u^{25} - 1.29 \times 10^{38} u^{24} + \cdots + 3.81 \times 10^{37} a + 4.07 \times 10^{38},\ 1.77 \times 10^{39} u^{25} - 1.31 \times 10^{39} u^{24} + \cdots + 4.76 \times 10^{39} b + 4.23 \times 10^{39} \rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -5.28164u^{25} + 3.37314u^{24} + \cdots - 81.5431u - 10.6919 \\ -0.371478u^{25} + 0.275145u^{24} + \cdots - 4.31029u - 0.889028 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 6.52047u^{25} - 5.01215u^{24} + \cdots + 75.6811u + 3.74273 \\ 0.602965u^{25} - 0.347955u^{24} + \cdots + 9.12486u + 1.29466 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 5.91750u^{25} - 4.66420u^{24} + \cdots + 66.5563u + 2.44808 \\ 0.602965u^{25} - 0.347955u^{24} + \cdots + 9.12486u + 1.29466 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 5.91750u^{25} - 4.66420u^{24} + \cdots + 66.5563u + 2.44808 \\ 0.341328u^{25} - 0.201268u^{24} + \cdots + 4.40911u + 0.441934 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 2.91826u^{25} - 1.66767u^{24} + \cdots + 47.3269u + 10.8866 \\ 0.283964u^{25} - 0.0704086u^{24} + \cdots + 4.18270u + 0.945077 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -7.21952u^{25} + 3.73368u^{24} + \cdots - 129.717u - 25.0935 \\ -0.483489u^{25} + 0.370439u^{24} + \cdots - 4.96490u - 1.25519 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -6.77870u^{25} + 5.66134u^{24} + \cdots - 74.9339u + 1.24743 \\ -0.567589u^{25} + 0.284870u^{24} + \cdots - 10.7367u - 1.30056 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 9.05581u^{25} - 4.54554u^{24} + \cdots + 162.602u + 32.3326 \\ -0.0897636u^{25} + 0.253355u^{24} + \cdots + 2.47995u + 1.21219 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 9.14557u^{25} - 4.79889u^{24} + \cdots + 160.122u + 31.1204 \\ -0.0897636u^{25} + 0.253355u^{24} + \cdots + 2.47995u + 1.21219 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 9.14557u^{25} - 4.79889u^{24} + \cdots + 160.122u + 31.1204 \\ -0.0897636u^{25} + 0.253355u^{24} + \cdots + 2.47995u + 1.21219 \end{pmatrix}$$

(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
$u=-1.30633-0.71384I$ $a=-0.350510-0.456376I$ $b=-1.66268+0.85822I$	$-0.911584-0.890121I$	$0.87423-1.36491I$
$u=-1.30633+0.71384I$ $a=-0.350510+0.456376I$ $b=-1.66268-0.85822I$	$-0.911584+0.890121I$	$0.87423+1.36491I$
$u=-0.80677-1.32805I$ $a=\ 0.816459+0.192912I$ $b=\ 2.56892-0.31546I$	$4.09462-6.26991I$	$-1.96309+5.01662I$
$u=-0.80677+1.32805I$ $a=\ 0.816459-0.192912I$ $b=\ 2.56892+0.31546I$	$4.09462+6.26991I$	$-1.96309-5.01662I$
$u=-0.487210-1.045470I$ $a=\ 0.396637-0.556299I$ $b=\ 0.170504-0.161735I$	$0.05851-2.13854I$	$-4.58802+1.91237I$
$u=-0.487210+1.045470I$ $a=\ 0.396637+0.556299I$ $b=\ 0.170504+0.161735I$	$0.05851+2.13854I$	$-4.58802-1.91237I$
$u=-0.43042-1.66549I$ $a=-0.785654+0.129108I$ $b=-2.38099-0.29478I$	$6.35723-8.21738I$	$-0.54202+5.78684I$
$u=-0.43042+1.66549I$ $a=-0.785654-0.129108I$ $b=-2.38099+0.29478I$	$6.35723+8.21738I$	$-0.54202-5.78684I$
$u=-0.369770-0.293138I$ $a=-1.92981-1.17028I$ $b=\ 0.109235-1.300571I$	$-2.47557-4.95345I$	$-6.39722+7.47760I$
$u=-0.369770+0.293138I$ $a=-1.92981+1.17028I$ $b=\ 0.109235+1.300571I$	$-2.47557+4.95345I$	$-6.39722-7.47760I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.237389 - 0.425546I$ $a = 1.51761 - 0.13937I$ $b = 0.082614 - 0.318226I$	$-0.10620 - 1.46904I$	$-0.77851 + 4.66825I$
$u = -0.237389 + 0.425546I$ $a = 1.51761 + 0.13937I$ $b = 0.082614 + 0.318226I$	$-0.10620 + 1.46904I$	$-0.77851 - 4.66825I$
$u = -0.155646 - 0.140338I$ $a = -0.30723 + 6.17255I$ $b = -0.348331 + 0.110512I$	$-7.98517 + 3.33888I$	$1.72089 - 5.46783I$
$u = -0.155646 + 0.140338I$ $a = -0.30723 - 6.17255I$ $b = -0.348331 - 0.110512I$	$-7.98517 - 3.33888I$	$1.72089 + 5.46783I$
$u = 0.42179 - 1.55871I$ $a = 0.835132 + 0.022592I$ $b = 2.34821 - 0.25354I$	$7.58035 + 1.64459I$	$1.58550 - 0.59315I$
$u = 0.42179 + 1.55871I$ $a = 0.835132 - 0.022592I$ $b = 2.34821 + 0.25354I$	$7.58035 - 1.64459I$	$1.58550 + 0.59315I$
$u = 0.430697 - 0.672525I$ $a = 0.562683 + 0.250090I$ $b = -0.937048 - 0.767596I$	$-4.35117 - 1.59149I$	$-10.56012 + 0.81365I$
$u = 0.430697 + 0.672525I$ $a = 0.562683 - 0.250090I$ $b = -0.937048 + 0.767596I$	$-4.35117 + 1.59149I$	$-10.56012 - 0.81365I$
$u = 0.463650 - 0.532995I$ $a = 0.85944 - 1.25245I$ $b = 0.713673 - 0.325930I$	$1.31071 - 2.42285I$	$0.84038 + 4.76679I$
$u = 0.463650 + 0.532995I$ $a = 0.85944 + 1.25245I$ $b = 0.713673 + 0.325930I$	$1.31071 + 2.42285I$	$0.84038 - 4.76679I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.62158 - 1.42798I$ $a = -0.178650 - 0.630360I$ $b = 0.016239 + 0.153182I$	$-1.86313 + 7.71246I$	$-6.86228 - 5.25734I$
$u = 0.62158 + 1.42798I$ $a = -0.178650 + 0.630360I$ $b = 0.016239 - 0.153182I$	$-1.86313 - 7.71246I$	$-6.86228 + 5.25734I$
$u = 0.96323 - 1.71069I$ $a = -0.709651 + 0.072053I$ $b = -2.60349 - 0.23914I$	$1.68898 + 13.33642I$	$-4.27120 - 7.69267I$
$u = 0.96323 + 1.71069I$ $a = -0.709651 - 0.072053I$ $b = -2.60349 + 0.23914I$	$1.68898 - 13.33642I$	$-4.27120 + 7.69267I$
$u = 1.142596 - 0.109328I$ $a = -0.226452 - 0.655730I$ $b = -1.82686 - 0.00144I$	$-5.04252 - 1.61304I$	$-10.18355 + 3.58696I$
$u = 1.142596 + 0.109328I$ $a = -0.226452 + 0.655730I$ $b = -1.82686 + 0.00144I$	$-5.04252 + 1.61304I$	$-10.18355 - 3.58696I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u-1)^4(u^3+u^2-1)^3(u^{26}+2u^{25}+\cdots+35u+4)$
c_2	$(u+1)^4(1+2u+u^2+u^3)^3(u^{26}+10u^{25}+\cdots+481u+16)$
c_3, c_7	$u^4(1+2u+u^2+u^3)^3(u^{26}-2u^{25}+\cdots-112u+64)$
c_4	$(u+1)^4(u^3+u^2-1)^3(u^{26}+2u^{25}+\cdots+35u+4)$
c_5	$(u^4+u^3+3u^2+2u+1)$ $(u^9+3u^7-3u^6+3u^5-6u^4+3u^3-3u^2+2u+1)$ $(u^{26}+2u^{25}+\cdots+2u+1)$
c_6	$(u^4+u^3+u^2+1)(u^9+3u^7-3u^6+3u^5-6u^4+3u^3-3u^2+2u+1)$ $(u^{26}+2u^{25}+\cdots+2u+1)$
c_8, c_9	$(u^4-u^3+3u^2-2u+1)$ $(u^9+3u^7-3u^6+3u^5-6u^4+3u^3-3u^2+2u+1)$ $(u^{26}+2u^{25}+\cdots+2u+1)$
c_{10}	$(u^4-u^3+u^2+1)(u^9+3u^7-3u^6+3u^5-6u^4+3u^3-3u^2+2u+1)$ $(u^{26}+2u^{25}+\cdots+2u+1)$
c_{11}	$(u^4-u^3+3u^2-2u+1)$ $(u^9+6u^8+15u^7+15u^6-5u^5-24u^4-9u^3+15u^2+10u-1)$ $(u^{26}+14u^{25}+\cdots+4u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y-1)^4(-1+2y-y^2+y^3)^3(y^{26}-10y^{25}+\cdots-481y+16)$
c_2	$(y-1)^4(-1+2y+3y^2+y^3)^3(y^{26}+14y^{25}+\cdots-80993y+256)$
c_3, c_7	$y^4(-1+2y+3y^2+y^3)^3(y^{26}+18y^{25}+\cdots+70400y+4096)$
c_5, c_8, c_9	$(y^4+5y^3+7y^2+2y+1)$ $(y^9+6y^8+15y^7+15y^6-5y^5-24y^4-9y^3+15y^2+10y-1)$ $(y^{26}+22y^{25}+\cdots+4y+1)$
c_6, c_{10}	$(y^4+y^3+3y^2+2y+1)$ $(y^9+6y^8+15y^7+15y^6-5y^5-24y^4-9y^3+15y^2+10y-1)$ $(y^{26}+14y^{25}+\cdots+4y+1)$
c_{11}	$(y^4+5y^3+\cdots+2y+1)(y^9-6y^8+\cdots+130y-1)$ $(y^{26}-2y^{25}+\cdots+20y+1)$