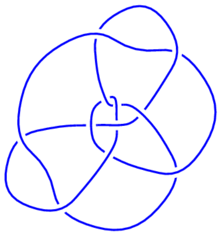
$11n_{172}$ ($K11n_{172}$)



1

Arc Sequences

$\rightarrow \uparrow \rightarrow \uparrow \rightarrow \downarrow \rightarrow \downarrow \rightarrow \uparrow \rightarrow \downarrow \rightarrow \uparrow \rightarrow \uparrow \rightarrow \uparrow \rightarrow \downarrow \rightarrow \uparrow \rightarrow$

6 9 1 10 2 4 11 2 7 5 9

Solving Sequence

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

Representation Ideals

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

$$I_1^u = \langle u^{16} - u^{15} + \cdots - 2u - 1,\ 61u^{15} - 11u^{14} + \cdots + 44b - 137,\ 211u^{15} - 99u^{14} + \cdots + 44a - 229\rangle$$

$$\begin{aligned} I_2^u = \langle & u^{40} + 2u^{39} + \cdots - 14u - 1, \\ & -2.48987 \times 10^{61}u^{39} - 4.82938 \times 10^{61}u^{38} + \cdots + 1.01371 \times 10^{62}b + 7.79734 \times 10^{61}, \\ & 2.85349 \times 10^{62}u^{39} + 5.48698 \times 10^{62}u^{38} + \cdots + 1.01371 \times 10^{62}a - 2.27568 \times 10^{63}\rangle \end{aligned}$$

There are 2 irreducible components with 56 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. $\boldsymbol{I_1^u = \langle u^{16} - u^{15} + \cdots - 2u - 1,\ 61u^{15} - 11u^{14} + \cdots + 44b - 137,\ 211u^{15} - 99u^{14} + \cdots + 44a - 229\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -4.79545u^{15} + 2.25000u^{14} + \cdots + 20.3636u + 5.20455 \\ -1.38636u^{15} + 0.250000u^{14} + \cdots + 5.59091u + 3.11364 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1.43182u^{15} + 0.500000u^{14} + \cdots - 13.2045u - 2.81818 \\ -1.13636u^{15} + 2.25000u^{14} + \cdots + 0.340909u - 0.386364 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 2.56818u^{15} - 1.75000u^{14} + \cdots - 13.5455u - 2.43182 \\ -1.13636u^{15} + 2.25000u^{14} + \cdots + 0.340909u - 0.386364 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -6.61364u^{15} + 4.50000u^{14} + \cdots + 24.6591u + 4.63636 \\ -2.31818u^{15} + 1.50000u^{14} + \cdots + 6.54545u + 2.68182 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{3}{4}u^{15} + 3u^{14} + \cdots - \frac{21}{4}u - \frac{7}{2} \\ 1.13636u^{15} - 1.50000u^{14} + \cdots - 4.09091u - 1.86364 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -6.31818u^{15} + 8u^{14} + \cdots + 13.0455u - 2.81818 \\ -1.09091u^{15} + 0.500000u^{14} + \cdots + 1.22727u - 0.590909 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.863636u^{15} + 3u^{14} + \cdots - 2.59091u - 2.36364 \\ 1.61364u^{15} - 1.75000u^{14} + \cdots - 6.40909u - 2.88636 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.863636u^{15} + 3u^{14} + \cdots - 2.59091u - 2.36364 \\ 1.61364u^{15} - 1.75000u^{14} + \cdots - 6.40909u - 2.88636 \end{pmatrix}$$

(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
$u = -1.08888$ $a = -1.65520$ $b = 1.14875$	3.38602	19.6054
$u = -0.379929 - 0.431781I$ $a = -1.21215 - 0.78064I$ $b = -0.10398 + 1.46365I$	$-5.56667 + 2.95635I$	$-4.74772 - 2.75237I$
$u = -0.379929 + 0.431781I$ $a = -1.21215 + 0.78064I$ $b = -0.10398 - 1.46365I$	$-5.56667 - 2.95635I$	$-4.74772 + 2.75237I$
$u = -0.299377 - 1.065241I$ $a = 0.498460 - 0.668912I$ $b = 0.795627 - 0.500550I$	$-0.62726 + 1.86405I$	$2.38240 - 3.76150I$
$u = -0.299377 + 1.065241I$ $a = 0.498460 + 0.668912I$ $b = 0.795627 + 0.500550I$	$-0.62726 - 1.86405I$	$2.38240 + 3.76150I$
$u = -0.190166 - 0.829536I$ $a = 1.53060 + 0.24921I$ $b = 0.602481 + 0.142061I$	$0.363930 + 0.209601I$	$0.372974 + 0.607008I$
$u = -0.190166 + 0.829536I$ $a = 1.53060 - 0.24921I$ $b = 0.602481 - 0.142061I$	$0.363930 - 0.209601I$	$0.372974 - 0.607008I$
$u = -0.050757 - 0.668728I$ $a = -2.51851 - 1.76824I$ $b = -0.486835 - 0.436096I$	$-1.13425 + 5.09162I$	$-5.21325 - 6.81011I$
$u = -0.050757 + 0.668728I$ $a = -2.51851 + 1.76824I$ $b = -0.486835 + 0.436096I$	$-1.13425 - 5.09162I$	$-5.21325 + 6.81011I$
$u = 0.19518 - 1.54614I$ $a = -0.24009 - 1.67107I$ $b = -0.13897 - 1.81400I$	$-12.18101 - 1.94801I$	$-0.634861 - 0.077298I$

Solution to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.19518 + 1.54614I$ $a = -0.24009 + 1.67107I$ $b = -0.13897 + 1.81400I$	$-12.18101 + 1.94801I$	$-0.634861 + 0.077298I$
$u = 0.361947 - 1.340667I$ $a = 0.190390 + 0.008678I$ $b = -0.736073 + 0.114852I$	$-4.61886 - 6.15067I$	$1.67402 + 4.95826I$
$u = 0.361947 + 1.340667I$ $a = 0.190390 - 0.008678I$ $b = -0.736073 - 0.114852I$	$-4.61886 + 6.15067I$	$1.67402 - 4.95826I$
$u = 0.597072 - 0.748618I$ $a = -0.419496 - 0.041748I$ $b = 0.087841 + 1.127950I$	$-8.25349 - 1.91163I$	$-5.00806 + 3.84199I$
$u = 0.597072 + 0.748618I$ $a = -0.419496 + 0.041748I$ $b = 0.087841 - 1.127950I$	$-8.25349 + 1.91163I$	$-5.00806 - 3.84199I$
$u = 1.62094$ $a = 0.996790$ $b = -1.18892$	1.43155	-5.25645

II. $\boldsymbol{I_2^u =}$
$\boldsymbol{\langle u^{40}+2u^{39}+\cdots-14u-1,\ -2.49\times10^{61}u^{39}-4.83\times10^{61}u^{38}+\cdots+1.01\times10^{62}b+7.80\times10^{61},\ 2.85\times10^{62}u^{39}+5.49\times10^{62}u^{38}+\cdots+1.01\times10^{62}a-2.28\times10^{63}\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-2.81489u^{39}-5.41275u^{38}+\cdots+216.961u+22.4489\\0.245619u^{39}+0.476405u^{38}+\cdots-11.7481u-0.769185\end{pmatrix}$$
$$a_3 = \begin{pmatrix}2.24338u^{39}+4.44433u^{38}+\cdots-166.087u-20.5892\\-0.0737940u^{39}-0.141157u^{38}+\cdots+8.96434u+0.546333\end{pmatrix}$$
$$a_4 = \begin{pmatrix}2.31718u^{39}+4.58549u^{38}+\cdots-175.051u-21.1355\\-0.0737940u^{39}-0.141157u^{38}+\cdots+8.96434u+0.546333\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-3.06419u^{39}-5.89858u^{38}+\cdots+228.486u+23.0011\\0.257433u^{39}+0.501984u^{38}+\cdots-11.6776u-0.781961\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-1.64745u^{39}-3.29893u^{38}+\cdots+121.757u+19.2119\\0.0580217u^{39}+0.116218u^{38}+\cdots-7.26051u-0.542306\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-3.53017u^{39}-6.64205u^{38}+\cdots+246.267u+13.8065\\0.0482060u^{39}+0.0516457u^{38}+\cdots-8.18351u+0.0416260\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-1.62591u^{39}-3.25910u^{38}+\cdots+120.037u+19.2014\\0.0334484u^{39}+0.0685099u^{38}+\cdots-5.51644u-0.528595\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-1.62591u^{39}-3.25910u^{38}+\cdots+120.037u+19.2014\\0.0334484u^{39}+0.0685099u^{38}+\cdots-5.51644u-0.528595\end{pmatrix}$$

(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
$u=-1.75447-0.27463I$ $a=-0.0220510+0.0395348I$ $b=-0.10898+2.12585I$	$-10.09044+5.18311I$	$-2.70240-3.54435I$
$u=-1.75447+0.27463I$ $a=-0.0220510-0.0395348I$ $b=-0.10898-2.12585I$	$-10.09044-5.18311I$	$-2.70240+3.54435I$
$u=-1.21545$ $a=-1.31118$ $b=\ 0.649335$	2.31916	3.45588
$u=-0.84317-1.82666I$ $a=\ 0.593658-0.965993I$ $b=-0.61921-2.17342I$	$-14.8294+4.4956I$	$-3.27609-2.70545I$
$u=-0.84317+1.82666I$ $a=\ 0.593658+0.965993I$ $b=-0.61921+2.17342I$	$-14.8294-4.4956I$	$-3.27609+2.70545I$
$u=-0.63008-1.69717I$ $a=-0.609510+1.233262I$ $b=\ 0.55981+2.10243I$	$-16.3560+13.3915I$	$-2.10100-5.83549I$
$u=-0.63008+1.69717I$ $a=-0.609510-1.233262I$ $b=\ 0.55981-2.10243I$	$-16.3560-13.3915I$	$-2.10100+5.83549I$
$u=-0.381500-0.672173I$ $a=-0.286606-0.290964I$ $b=-0.248699-0.413490I$	$0.03644+1.50292I$	$1.25089-6.14683I$
$u=-0.381500+0.672173I$ $a=-0.286606+0.290964I$ $b=-0.248699+0.413490I$	$0.03644-1.50292I$	$1.25089+6.14683I$
$u=-0.325667-1.141167I$ $a=-0.798264+0.284615I$ $b=-1.025039+0.573847I$	$-1.21242+1.07873I$	$-3.63948+1.17826I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.325667 + 1.141167I$ $a = -0.798264 - 0.284615I$ $b = -1.025039 - 0.573847I$	$-1.21242 - 1.07873I$	$-3.63948 - 1.17826I$
$u = -0.246524 - 1.044101I$ $a = -0.211827 - 0.946805I$ $b = 0.266752 - 0.501923I$	$-1.63884 + 2.52981I$	$-3.46896 - 4.78238I$
$u = -0.246524 + 1.044101I$ $a = -0.211827 + 0.946805I$ $b = 0.266752 + 0.501923I$	$-1.63884 - 2.52981I$	$-3.46896 + 4.78238I$
$u = -0.197863 - 0.060558I$ $a = -2.88076 - 3.04382I$ $b = -0.577307 - 0.064688I$	$1.31470 + 0.60771I$	$8.49421 - 3.04989I$
$u = -0.197863 + 0.060558I$ $a = -2.88076 + 3.04382I$ $b = -0.577307 + 0.064688I$	$1.31470 - 0.60771I$	$8.49421 + 3.04989I$
$u = -0.10749 - 1.61398I$ $a = 0.339161 - 0.635536I$ $b = -0.942745 - 0.706252I$	$-6.22320 - 3.43752I$	$-2.13285 + 2.29436I$
$u = -0.10749 + 1.61398I$ $a = 0.339161 + 0.635536I$ $b = -0.942745 + 0.706252I$	$-6.22320 + 3.43752I$	$-2.13285 - 2.29436I$
$u = -0.0965200 - 0.0759702I$ $a = -2.97374 - 13.61605I$ $b = 0.588296 + 0.344976I$	$-0.55843 + 5.04023I$	$8.92316 - 6.11668I$
$u = -0.0965200 + 0.0759702I$ $a = -2.97374 + 13.61605I$ $b = 0.588296 - 0.344976I$	$-0.55843 - 5.04023I$	$8.92316 + 6.11668I$
$u = 0.05196 - 1.65626I$ $a = 0.220045 + 0.567547I$ $b = 1.53393 + 0.95218I$	$-6.89381 + 4.31374I$	$-3.00921 - 2.52408I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.05196 + 1.65626I$ $a = 0.220045 - 0.567547I$ $b = 1.53393 - 0.95218I$	$-6.89381 - 4.31374I$	$-3.00921 + 2.52408I$
$u = 0.13173 - 1.46303I$ $a = -0.06034 - 1.93217I$ $b = -0.14005 - 1.63978I$	$-12.97916 - 2.42998I$	$-9.06445 + 4.17297I$
$u = 0.13173 + 1.46303I$ $a = -0.06034 + 1.93217I$ $b = -0.14005 + 1.63978I$	$-12.97916 + 2.42998I$	$-9.06445 - 4.17297I$
$u = 0.14644 - 1.58425I$ $a = 0.29330 + 1.55586I$ $b = 0.49563 + 2.13728I$	$-14.3940 - 1.3454I$	$-5.37205 + 0.15160I$
$u = 0.14644 + 1.58425I$ $a = 0.29330 - 1.55586I$ $b = 0.49563 - 2.13728I$	$-14.3940 + 1.3454I$	$-5.37205 - 0.15160I$
$u = 0.27705 - 1.55024I$ $a = 0.36039 + 1.64659I$ $b = -0.46245 + 2.16251I$	$-10.55226 - 6.76566I$	$-1.06220 + 4.68199I$
$u = 0.27705 + 1.55024I$ $a = 0.36039 - 1.64659I$ $b = -0.46245 - 2.16251I$	$-10.55226 + 6.76566I$	$-1.06220 - 4.68199I$
$u = 0.28024 - 1.51688I$ $a = -0.47715 - 1.61323I$ $b = 0.31655 - 1.86696I$	$-9.55118 - 0.96633I$	$0.232502 - 0.266577I$
$u = 0.28024 + 1.51688I$ $a = -0.47715 + 1.61323I$ $b = 0.31655 + 1.86696I$	$-9.55118 + 0.96633I$	$0.232502 + 0.266577I$
$u = 0.345255 - 0.125454I$ $a = -1.73592 + 1.36825I$ $b = 0.178266 + 1.332875I$	$-8.09181 + 0.67197I$	$-3.63743 + 1.66692I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.345255 + 0.125454I$ $a = -1.73592 - 1.36825I$ $b = 0.178266 - 1.332875I$	$-8.09181 - 0.67197I$	$-3.63743 - 1.66692I$
$u = 0.440412 - 1.198771I$ $a = -0.196802 - 0.687503I$ $b = 0.485884 - 0.400355I$	$-6.21063 - 2.44288I$	$-1.57019 + 3.53786I$
$u = 0.440412 + 1.198771I$ $a = -0.196802 + 0.687503I$ $b = 0.485884 + 0.400355I$	$-6.21063 + 2.44288I$	$-1.57019 - 3.53786I$
$u = 0.458127 - 1.196180I$ $a = 0.644252 + 0.048307I$ $b = 0.149211 + 0.533355I$	$-5.71740 - 6.20191I$	$-6.05433 + 5.08780I$
$u = 0.458127 + 1.196180I$ $a = 0.644252 - 0.048307I$ $b = 0.149211 - 0.533355I$	$-5.71740 + 6.20191I$	$-6.05433 - 5.08780I$
$u = 0.742397 - 0.144685I$ $a = -0.110723 - 0.345539I$ $b = -0.00282 + 1.58047I$	$-4.59373 - 2.98825I$	$4.81250 + 3.01552I$
$u = 0.742397 + 0.144685I$ $a = -0.110723 + 0.345539I$ $b = -0.00282 - 1.58047I$	$-4.59373 + 2.98825I$	$4.81250 - 3.01552I$
$u = 0.768195 - 0.090718I$ $a = -0.230836 + 0.267949I$ $b = 0.389053 - 0.579808I$	$-2.47058 + 1.70720I$	$0.230221 - 0.591796I$
$u = 0.768195 + 0.090718I$ $a = -0.230836 - 0.267949I$ $b = 0.389053 + 0.579808I$	$-2.47058 - 1.70720I$	$0.230221 + 0.591796I$
$u = 1.09842$ $a = 1.59864$ $b = -1.32148$	3.09539	-9.16156

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^{16} - u^{15} + \cdots - 2u - 1)(u^{40} + 2u^{39} + \cdots - 14u - 1)$
c_2	$(u^{16} + 5u^{14} + \cdots + 10u^2 - 4)(u^{40} + u^{39} + \cdots - 492u - 892)$
c_3	$(u^{16} + 8u^{15} + \cdots + 12u + 8)(u^{40} + 5u^{39} + \cdots + 248u + 88)$
c_4	$(u^{16} - 6u^{14} + \cdots - 14u^2 + 4)(u^{40} + u^{39} + \cdots + 12u + 4)$
c_5	$(u^{16} + u^{15} + \cdots + 2u - 1)(u^{40} + 2u^{39} + \cdots - 14u - 1)$
c_6	$(u^{16} + 2u^{15} + \cdots + 11u + 1)(u^{40} + 5u^{39} + \cdots - 457u + 29)$
c_7	$(u^{16} - 2u^{15} + \cdots + 13u + 1)(u^{40} + 3u^{39} + \cdots + 26575u + 7349)$
c_8	$(u^{16} + 5u^{14} + \cdots + 10u^2 - 4)(u^{40} + u^{39} + \cdots - 492u - 892)$
c_9	$(u^{16} - 6u^{15} + \cdots - 2u + 1)(u^{40} + 5u^{39} + \cdots + 96u + 11)$
c_{10}	$(u^{16} - 6u^{14} + \cdots - 14u^2 + 4)(u^{40} + u^{39} + \cdots + 12u + 4)$
c_{11}	$(u^{16} + 4u^{14} + \cdots + 4u^2 - 1)(u^{40} + u^{39} + \cdots - 1168u - 424)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5	$(y^{16} + 9y^{15} + \cdots + 10y + 1)(y^{40} + 38y^{39} + \cdots - 78y + 1)$
c_2, c_8	$(y^{16} + 10y^{15} + \cdots - 80y + 16)$ $(y^{40} + 63y^{39} + \cdots + 6026912y + 795664)$
c_3	$(y^{16} - 20y^{15} + \cdots - 1168y + 64)$ $(y^{40} - 59y^{39} + \cdots - 199840y + 7744)$
c_4, c_{10}	$(y^{16} - 12y^{15} + \cdots - 112y + 16)(y^{40} - 35y^{39} + \cdots + 1888y + 16)$
c_6	$(y^{16} + 4y^{14} + \cdots - 91y + 1)(y^{40} - 15y^{39} + \cdots - 262383y + 841)$
c_7	$(y^{16} + 10y^{15} + \cdots - 69y + 1)$ $(y^{40} + 47y^{39} + \cdots + 923130863y + 54007801)$
c_9	$(y^{16} - 2y^{15} + \cdots - 2y + 1)(y^{40} + 7y^{39} + \cdots - 218y + 121)$
c_{11}	$(y^{16} + 8y^{15} + \cdots - 8y + 1)(y^{40} + 57y^{39} + \cdots + 1150944y + 179776)$