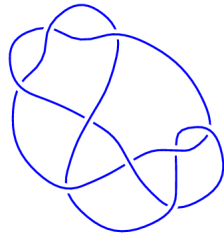
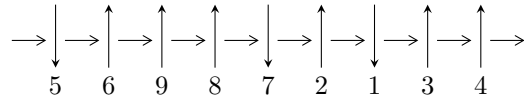


9<sub>26</sub> (K9a<sub>15</sub>)

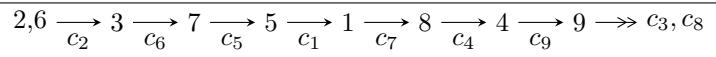


1

**Arc Sequences**



**Solving Sequence**



**Representation Ideals**

$$I = I_1^u$$

$$I_1^u = \langle u^{23} - u^{22} + \dots + 2u - 1 \rangle$$

There are 1 irreducible components with 23 representations.

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

$$\text{I. } \Gamma_1^u = \langle u^{23} - u^{22} + \cdots + 2u - 1 \rangle$$

(i) Arc colorings

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

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

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

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

$$a_5 = \begin{pmatrix} u^3 \\ u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^6 - u^4 + 1 \\ -u^6 - 2u^4 - u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^{11} + 2u^9 + 2u^7 - u^3 \\ u^{11} + 3u^9 + 4u^7 + 3u^5 + u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^{19} + 4u^{17} + 8u^{15} + 8u^{13} + 3u^{11} - 2u^9 - 2u^7 + u^3 \\ u^{19} + 5u^{17} + 12u^{15} + 17u^{13} + 15u^{11} + 9u^9 + 4u^7 + 2u^5 + u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^{13} + 4u^{11} + 7u^9 + 6u^7 + 2u^5 + u \\ -u^{15} - 3u^{13} - 4u^{11} - u^9 + 2u^7 + 2u^5 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^{13} + 4u^{11} + 7u^9 + 6u^7 + 2u^5 + u \\ -u^{15} - 3u^{13} - 4u^{11} - u^9 + 2u^7 + 2u^5 + u \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes

$$= 4u^{22} - 4u^{21} + 20u^{20} - 16u^{19} + 52u^{18} - 40u^{17} + 84u^{16} - 64u^{15} + 92u^{14} - 80u^{13} + 76u^{12} - 76u^{11} + 56u^{10} - 60u^9 + 44u^8 - 36u^7 + 28u^6 - 20u^5 + 12u^4 - 8u^3 + 4u^2 - 8u + 10$$

(iv) Complex Volumes and Cusp Shapes

| Solution to $I_1^u$         | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape            |
|-----------------------------|---------------------------------------|-----------------------|
| $u = -0.678759 - 0.332917I$ | $0.22041 - 2.29224I$                  | $3.82667 + 3.81893I$  |
| $u = -0.678759 + 0.332917I$ | $0.22041 + 2.29224I$                  | $3.82667 - 3.81893I$  |
| $u = -0.678518 - 0.591878I$ | $6.78087 + 3.16234I$                  | $9.66460 - 3.46689I$  |
| $u = -0.678518 + 0.591878I$ | $6.78087 - 3.16234I$                  | $9.66460 + 3.46689I$  |
| $u = -0.587297 - 0.977894I$ | $5.64121 + 1.73636I$                  | $7.79313 - 2.46590I$  |
| $u = -0.587297 + 0.977894I$ | $5.64121 - 1.73636I$                  | $7.79313 + 2.46590I$  |
| $u = -0.545632 - 1.104543I$ | $-2.00141 + 7.02777I$                 | $0.43599 - 7.34039I$  |
| $u = -0.545632 + 1.104543I$ | $-2.00141 - 7.02777I$                 | $0.43599 + 7.34039I$  |
| $u = -0.289337 - 1.083673I$ | $-3.74248 + 0.30335I$                 | $-3.41146 + 0.40480I$ |
| $u = -0.289337 + 1.083673I$ | $-3.74248 - 0.30335I$                 | $-3.41146 - 0.40480I$ |
| $u = 0.200891 - 1.110727I$  | $0.95696 + 3.02476I$                  | $1.87787 - 2.21609I$  |
| $u = 0.200891 + 1.110727I$  | $0.95696 - 3.02476I$                  | $1.87787 + 2.21609I$  |
| $u = 0.401368 - 1.094533I$  | $-1.02537 - 3.60580I$                 | $1.11445 + 4.48858I$  |
| $u = 0.401368 + 1.094533I$  | $-1.02537 + 3.60580I$                 | $1.11445 - 4.48858I$  |
| $u = 0.500260 - 1.048709I$  | $-0.61995 - 3.26242I$                 | $3.19624 + 2.26815I$  |
| $u = 0.500260 + 1.048709I$  | $-0.61995 + 3.26242I$                 | $3.19624 - 2.26815I$  |
| $u = 0.533348 - 0.509445I$  | $1.014040 - 0.946726I$                | $6.43633 + 4.33310I$  |
| $u = 0.533348 + 0.509445I$  | $1.014040 + 0.946726I$                | $6.43633 - 4.33310I$  |
| $u = 0.578827 - 1.116212I$  | $3.43142 - 10.59584I$                 | $5.03092 + 7.47788I$  |
| $u = 0.578827 + 1.116212I$  | $3.43142 + 10.59584I$                 | $5.03092 - 7.47788I$  |
| $u = 0.600722$              | $1.95316$                             | $5.52609$             |
| $u = 0.764487 - 0.367117I$  | $5.63952 + 5.52406I$                  | $8.27222 - 3.52157I$  |
| $u = 0.764487 + 0.367117I$  | $5.63952 - 5.52406I$                  | $8.27222 + 3.52157I$  |

## II. u-Polynomials

| Crossings       | u-Polynomials at each crossings          |
|-----------------|--|
| $c_1$           | $(u^{23} + u^{22} + \dots - 8u - 5)$     |
| $c_2, c_6$      | $(u^{23} + u^{22} + \dots + 2u + 1)$     |
| $c_3, c_8, c_9$ | $(u^{23} + u^{22} + \dots - 2u^3 + 1)$   |
| $c_4$           | $(u^{23} + 3u^{22} + \dots + 4u + 1)$    |
| $c_5$           | $(u^{23} + 11u^{22} + \dots - 2u^2 - 1)$ |
| $c_7$           | $(u^{23} + 5u^{22} + \dots + 32u + 7)$   |

### III. Riley Polynomials

| Crossings       | Riley Polynomials at each crossings      |
|-----------------|--|
| $c_1$           | $(y^{23} - 5y^{22} + \dots + 264y - 25)$ |
| $c_2, c_6$      | $(y^{23} + 11y^{22} + \dots - 2y^2 - 1)$ |
| $c_3, c_8, c_9$ | $(y^{23} - 21y^{22} + \dots - 6y^2 - 1)$ |
| $c_4$           | $(y^{23} - y^{22} + \dots + 4y - 1)$     |
| $c_5$           | $(y^{23} + 3y^{22} + \dots - 4y - 1)$    |
| $c_7$           | $(y^{23} + 7y^{22} + \dots - 404y - 49)$ |