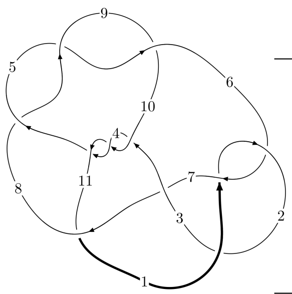
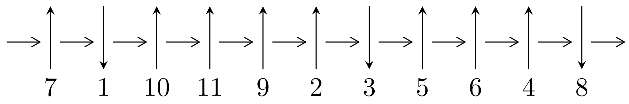
# $11a_{194}$ ($K11a_{194}$)




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

**Ideals for irreducible components[2] of $X_{\mathbf{par}}$**

$$I_1^u = \langle u^{22} - 2u^{21} + \cdots + b + 1,\ 3u^{22} - 7u^{21} + \cdots + 2a - 8u,\ u^{23} - 3u^{22} + \cdots + 6u - 2\rangle$$
$$I_2^u = \langle -26u^{14}a + 25u^{14} + \cdots - 45a + 53,\ u^{14} + 2u^{13} + \cdots - 2a + 2,$$
$$u^{15} + u^{14} + 4u^{13} + 3u^{12} + 8u^{11} + 6u^{10} + 10u^9 + 7u^8 + 8u^7 + 6u^6 + 6u^5 + 4u^4 + 4u^3 + 2u^2 + 2u + 1\rangle$$
$$I_3^u = \langle b - 1,\ u^3 - 2u^2 + 2a - 2,\ u^4 + 2u^2 + 2\rangle$$

$$I_1^v = \langle a,\ b + 1,\ v + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 58 representations.

[1] The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2] All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

**I.**

$$I^u_1 = \langle u^{22}-2u^{21}+\cdots+b+1,\ 3u^{22}-7u^{21}+\cdots+2a-8u,\ u^{23}-3u^{22}+\cdots+6u-2\rangle$$

**(i) Arc colorings**

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{3}{2}u^{22} + \frac{7}{2}u^{21} + \cdots - 7u^2 + 4u \\ -u^{22} + 2u^{21} + \cdots + 2u - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{5}{2}u^{22} + \frac{11}{2}u^{21} + \cdots + 6u - 1 \\ -u^{22} + 2u^{21} + \cdots + 2u - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^3 \\ u^5 + u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{2}u^{22} + \frac{3}{2}u^{21} + \cdots + 2u - 1 \\ u^{20} - u^{19} + \cdots - u + 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{1}{2}u^{22} + \frac{3}{2}u^{21} + \cdots + 4u - 1 \\ u^{20} - u^{19} + \cdots - 2u + 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^6 - u^4 + 1 \\ u^8 + 2u^6 + 2u^4 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^{11} - 2u^9 - 2u^7 + u^3 \\ u^{13} + 3u^{11} + 5u^9 + 4u^7 + 2u^5 + u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^{11} - 2u^9 - 2u^7 + u^3 \\ u^{13} + 3u^{11} + 5u^9 + 4u^7 + 2u^5 + u^3 + u \end{pmatrix}$$

**(ii) Obstruction class** $= -1$

**(iii) Cusp Shapes**

$= 2u^{22} - 6u^{21} + 18u^{20} - 32u^{19} + 58u^{18} - 84u^{17} + 122u^{16} - 152u^{15} + 182u^{14} - 192u^{13} + 206u^{12} - 194u^{11} + 188u^{10} - 154u^9 + 126u^8 - 102u^7 + 68u^6 - 38u^5 + 12u^4 + 6u^3 + 8u^2 - 2u + 4$

**(iv) u-Polynomials at the component**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $u^{23} + 3u^{22} + \cdots + 6u + 2$ |
| $c_2$ | $u^{23} + 11u^{22} + \cdots - 4u - 4$ |
| $c_3, c_4, c_5$<br>$c_8, c_9, c_{10}$ | $u^{23} - u^{22} + \cdots + 4u^2 - 1$ |
| $c_7$ | $u^{23} - 3u^{22} + \cdots - 166u + 34$ |
| $c_{11}$ | $u^{23} + 15u^{22} + \cdots + 1790u + 314$ |

**(v) Riley Polynomials at the component**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $y^{23} + 11y^{22} + \cdots - 4y - 4$ |
| $c_2$ | $y^{23} + 3y^{22} + \cdots - 208y - 16$ |
| $c_3, c_4, c_5$<br>$c_8, c_9, c_{10}$ | $y^{23} - 29y^{22} + \cdots + 8y - 1$ |
| $c_7$ | $y^{23} - 5y^{22} + \cdots + 4028y - 1156$ |
| $c_{11}$ | $y^{23} + 7y^{22} + \cdots - 489796y - 98596$ |

**(vi) Complex Volumes and Cusp Shapes**

| Solutions to $I_1^u$ | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.768464 + 0.625797I$<br>$a = -2.35900 - 0.70924I$<br>$b = 1.59436 - 0.22254I$ | $14.4326 - 5.1937I$ | $13.7476 + 3.5950I$ |
| $u = -0.768464 - 0.625797I$<br>$a = -2.35900 + 0.70924I$<br>$b = 1.59436 + 0.22254I$ | $14.4326 + 5.1937I$ | $13.7476 - 3.5950I$ |
| $u = 0.835379 + 0.384998I$<br>$a = -2.06431 - 0.48967I$<br>$b = 1.55191 - 0.30830I$ | $13.0517 - 8.4231I$ | $12.86699 + 3.68057I$ |
| $u = 0.835379 - 0.384998I$<br>$a = -2.06431 + 0.48967I$<br>$b = 1.55191 + 0.30830I$ | $13.0517 + 8.4231I$ | $12.86699 - 3.68057I$ |
| $u = 0.305961 + 1.048060I$<br>$a = 0.143181 - 0.764944I$<br>$b = 0.168196 - 0.598689I$ | $-3.26008 + 0.62293I$ | $-1.92583 + 0.88926I$ |
| $u = 0.305961 - 1.048060I$<br>$a = 0.143181 + 0.764944I$<br>$b = 0.168196 + 0.598689I$ | $-3.26008 - 0.62293I$ | $-1.92583 - 0.88926I$ |
| $u = -0.477361 + 1.058390I$<br>$a = -0.325021 - 0.446372I$<br>$b = 0.496916 + 0.116873I$ | $-0.90872 - 3.31162I$ | $4.18007 + 2.04912I$ |
| $u = -0.477361 - 1.058390I$<br>$a = -0.325021 + 0.446372I$<br>$b = 0.496916 - 0.116873I$ | $-0.90872 + 3.31162I$ | $4.18007 - 2.04912I$ |
| $u = -0.666288 + 0.980877I$<br>$a = 1.51895 + 1.19962I$<br>$b = -1.60630 - 0.17413I$ | $13.37540 - 0.20863I$ | $12.34199 + 1.72313I$ |
| $u = -0.666288 - 0.980877I$<br>$a = 1.51895 - 1.19962I$<br>$b = -1.60630 + 0.17413I$ | $13.37540 + 0.20863I$ | $12.34199 - 1.72313I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.810177$<br>$a = 1.05047$<br>$b = -1.45269$ | $7.53068$ | $12.4950$ |
| $u = 0.150597 + 1.188510I$<br>$a = -0.209754 + 0.504264I$<br>$b = -1.50263 + 0.26695I$ | $7.74907 - 5.71311I$ | $7.54100 + 2.76920I$ |
| $u = 0.150597 - 1.188510I$<br>$a = -0.209754 - 0.504264I$<br>$b = -1.50263 - 0.26695I$ | $7.74907 + 5.71311I$ | $7.54100 - 2.76920I$ |
| $u = 0.534647 + 1.084890I$<br>$a = -1.091580 + 0.807678I$<br>$b = 0.370860 + 0.589443I$ | $-1.70058 + 6.34697I$ | $2.48807 - 8.83395I$ |
| $u = 0.534647 - 1.084890I$<br>$a = -1.091580 - 0.807678I$<br>$b = 0.370860 - 0.589443I$ | $-1.70058 - 6.34697I$ | $2.48807 + 8.83395I$ |
| $u = 0.432454 + 1.201200I$<br>$a = 0.317778 + 1.107100I$<br>$b = 1.412020 + 0.045870I$ | $3.91675 + 4.39214I$ | $8.96484 - 3.62176I$ |
| $u = 0.432454 - 1.201200I$<br>$a = 0.317778 - 1.107100I$<br>$b = 1.412020 - 0.045870I$ | $3.91675 - 4.39214I$ | $8.96484 + 3.62176I$ |
| $u = 0.624484 + 0.349425I$<br>$a = 0.805631 - 0.022305I$<br>$b = -0.341398 + 0.488155I$ | $0.39287 - 1.77603I$ | $5.94653 + 5.32090I$ |
| $u = 0.624484 - 0.349425I$<br>$a = 0.805631 + 0.022305I$<br>$b = -0.341398 - 0.488155I$ | $0.39287 + 1.77603I$ | $5.94653 - 5.32090I$ |
| $u = 0.609932 + 1.133500I$<br>$a = 1.32397 - 2.18810I$<br>$b = -1.53955 - 0.33727I$ | $10.8121 + 13.7968I$ | $9.98537 - 7.70704I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.609932 - 1.133500I$<br>$a = 1.32397 + 2.18810I$<br>$b = -1.53955 + 0.33727I$ | $10.8121 - 13.7968I$ | $9.98537 + 7.70704I$ |
| $u = -0.486428 + 0.465014I$<br>$a = 0.914914 + 0.002129I$<br>$b = -0.378035 + 0.245051I$ | $0.881089 - 0.706259I$ | $8.61582 + 5.28098I$ |
| $u = -0.486428 - 0.465014I$<br>$a = 0.914914 - 0.002129I$<br>$b = -0.378035 - 0.245051I$ | $0.881089 + 0.706259I$ | $8.61582 - 5.28098I$ |

## II. $I_2^u =$
## $\langle -26u^{14}a+25u^{14}+\cdots-45a+53,\ u^{14}+2u^{13}+\cdots-2a+2,\ u^{15}+u^{14}+\cdots+2u+1\rangle$

**(i) Arc colorings**

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ 2.36364au^{14} - 2.27273u^{14} + \cdots + 4.09091a - 4.81818 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 2.36364au^{14} - 2.27273u^{14} + \cdots + 5.09091a - 4.81818 \\ 2.36364au^{14} - 2.27273u^{14} + \cdots + 4.09091a - 4.81818 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^3 \\ u^5 + u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -2.27273au^{14} + 2.45455u^{14} + \cdots - 4.81818a + 4.36364 \\ -1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 2.27273au^{14} - 2.45455u^{14} + \cdots + 4.81818a - 4.36364 \\ -1.81818au^{14} + 2.36364u^{14} + \cdots - 3.45455a + 5.09091 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^6 - u^4 + 1 \\ u^8 + 2u^6 + 2u^4 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^{11} - 2u^9 - 2u^7 + u^3 \\ u^{13} + 3u^{11} + 5u^9 + 4u^7 + 2u^5 + u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^{11} - 2u^9 - 2u^7 + u^3 \\ u^{13} + 3u^{11} + 5u^9 + 4u^7 + 2u^5 + u^3 + u \end{pmatrix}$$

**(ii) Obstruction class** $= -1$

**(iii) Cusp Shapes**
$= -4u^{13}-4u^{12}-12u^{11}-12u^{10}-20u^9-24u^8-20u^7-24u^6-16u^5-16u^4-16u^3-8u^2-8u+2$

**(iv) u-Polynomials at the component**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $(u^{15} - u^{14} + \cdots + 2u - 1)^2$ |
| $c_2$ | $(u^{15} + 7u^{14} + \cdots + 4u^2 - 1)^2$ |
| $c_3, c_4, c_5$<br>$c_8, c_9, c_{10}$ | $u^{30} - u^{29} + \cdots - 6u - 1$ |
| $c_7$ | $(u^{15} + u^{14} + \cdots - 4u - 1)^2$ |
| $c_{11}$ | $(u^{15} - 5u^{14} + \cdots + 12u^3 - 1)^2$ |

**(v) Riley Polynomials at the component**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $(y^{15} + 7y^{14} + \cdots + 4y^2 - 1)^2$ |
| $c_2$ | $(y^{15} + 3y^{14} + \cdots + 8y - 1)^2$ |
| $c_3, c_4, c_5$<br>$c_8, c_9, c_{10}$ | $y^{30} - 25y^{29} + \cdots + 8y + 1$ |
| $c_7$ | $(y^{15} - y^{14} + \cdots + 16y - 1)^2$ |
| $c_{11}$ | $(y^{15} + 11y^{14} + \cdots - 84y^2 - 1)^2$ |

**(vi) Complex Volumes and Cusp Shapes**

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.385605 + 0.867795I$<br>$a = 1.48418 + 0.28748I$<br>$b = -1.191720 + 0.191378I$ | $2.93870 + 1.66084I$ | $9.51042 - 3.96405I$ |
| $u = 0.385605 + 0.867795I$<br>$a = -0.57671 + 2.31540I$<br>$b = 0.987326 + 0.341266I$ | $2.93870 + 1.66084I$ | $9.51042 - 3.96405I$ |
| $u = 0.385605 - 0.867795I$<br>$a = 1.48418 - 0.28748I$<br>$b = -1.191720 - 0.191378I$ | $2.93870 - 1.66084I$ | $9.51042 + 3.96405I$ |
| $u = 0.385605 - 0.867795I$<br>$a = -0.57671 - 2.31540I$<br>$b = 0.987326 - 0.341266I$ | $2.93870 - 1.66084I$ | $9.51042 + 3.96405I$ |
| $u = -0.146928 + 1.062740I$<br>$a = 0.506354 + 1.080350I$<br>$b = 0.417318 + 0.715805I$ | $1.46912 + 2.07402I$ | $4.17178 - 2.67122I$ |
| $u = -0.146928 + 1.062740I$<br>$a = 0.286056 - 0.497573I$<br>$b = -1.345540 - 0.160838I$ | $1.46912 + 2.07402I$ | $4.17178 - 2.67122I$ |
| $u = -0.146928 - 1.062740I$<br>$a = 0.506354 - 1.080350I$<br>$b = 0.417318 - 0.715805I$ | $1.46912 - 2.07402I$ | $4.17178 + 2.67122I$ |
| $u = -0.146928 - 1.062740I$<br>$a = 0.286056 + 0.497573I$<br>$b = -1.345540 + 0.160838I$ | $1.46912 - 2.07402I$ | $4.17178 + 2.67122I$ |
| $u = 0.715401 + 0.518352I$<br>$a = 0.929094 + 0.108337I$<br>$b = -0.681034 - 0.791319I$ | $6.82325 + 1.50523I$ | $12.15133 - 2.74048I$ |
| $u = 0.715401 + 0.518352I$<br>$a = -2.92853 + 0.30497I$<br>$b = 1.45955 + 0.03447I$ | $6.82325 + 1.50523I$ | $12.15133 - 2.74048I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.715401 - 0.518352I$<br>$a = 0.929094 - 0.108337I$<br>$b = -0.681034 + 0.791319I$ | $6.82325 - 1.50523I$ | $12.15133 + 2.74048I$ |
| $u = 0.715401 - 0.518352I$<br>$a = -2.92853 - 0.30497I$<br>$b = 1.45955 - 0.03447I$ | $6.82325 - 1.50523I$ | $12.15133 + 2.74048I$ |
| $u = -0.758945 + 0.422629I$<br>$a = 0.667191 + 0.185788I$<br>$b = -0.516053 - 0.873011I$ | $6.30676 + 4.09199I$ | $11.04427 - 3.15094I$ |
| $u = -0.758945 + 0.422629I$<br>$a = -2.63836 + 0.44671I$<br>$b = 1.46243 + 0.15596I$ | $6.30676 + 4.09199I$ | $11.04427 - 3.15094I$ |
| $u = -0.758945 - 0.422629I$<br>$a = 0.667191 - 0.185788I$<br>$b = -0.516053 + 0.873011I$ | $6.30676 - 4.09199I$ | $11.04427 + 3.15094I$ |
| $u = -0.758945 - 0.422629I$<br>$a = -2.63836 - 0.44671I$<br>$b = 1.46243 - 0.15596I$ | $6.30676 - 4.09199I$ | $11.04427 + 3.15094I$ |
| $u = -0.426893 + 1.085670I$<br>$a = -0.045925 - 1.153050I$<br>$b = 1.008860 - 0.127254I$ | $-0.91830 - 3.60340I$ | $1.83628 + 4.47672I$ |
| $u = -0.426893 + 1.085670I$<br>$a = -0.652015 + 0.334121I$<br>$b = 0.026324 + 0.245041I$ | $-0.91830 - 3.60340I$ | $1.83628 + 4.47672I$ |
| $u = -0.426893 - 1.085670I$<br>$a = -0.045925 + 1.153050I$<br>$b = 1.008860 + 0.127254I$ | $-0.91830 + 3.60340I$ | $1.83628 - 4.47672I$ |
| $u = -0.426893 - 1.085670I$<br>$a = -0.652015 - 0.334121I$<br>$b = 0.026324 - 0.245041I$ | $-0.91830 + 3.60340I$ | $1.83628 - 4.47672I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.594997 + 1.040830I$<br>$a = 0.400000 + 0.495676I$<br>$b = 0.773820 - 0.766183I$ | $5.27292 + 3.51852I$ | $9.71302 - 2.59027I$ |
| $u = 0.594997 + 1.040830I$<br>$a = 2.00079 - 1.63767I$<br>$b = -1.46460 - 0.02952I$ | $5.27292 + 3.51852I$ | $9.71302 - 2.59027I$ |
| $u = 0.594997 - 1.040830I$<br>$a = 0.400000 - 0.495676I$<br>$b = 0.773820 + 0.766183I$ | $5.27292 - 3.51852I$ | $9.71302 + 2.59027I$ |
| $u = 0.594997 - 1.040830I$<br>$a = 2.00079 + 1.63767I$<br>$b = -1.46460 + 0.02952I$ | $5.27292 - 3.51852I$ | $9.71302 + 2.59027I$ |
| $u = -0.594032 + 1.095620I$<br>$a = -1.24711 - 0.90132I$<br>$b = 0.463749 - 0.915832I$ | $4.31617 - 9.21780I$ | $7.85460 + 7.39135I$ |
| $u = -0.594032 + 1.095620I$<br>$a = 1.71287 + 2.15495I$<br>$b = -1.47039 + 0.20072I$ | $4.31617 - 9.21780I$ | $7.85460 + 7.39135I$ |
| $u = -0.594032 - 1.095620I$<br>$a = -1.24711 + 0.90132I$<br>$b = 0.463749 + 0.915832I$ | $4.31617 + 9.21780I$ | $7.85460 - 7.39135I$ |
| $u = -0.594032 - 1.095620I$<br>$a = 1.71287 - 2.15495I$<br>$b = -1.47039 - 0.20072I$ | $4.31617 + 9.21780I$ | $7.85460 - 7.39135I$ |
| $u = -0.538411$<br>$a = 1.00814$<br>$b = -1.09727$ | 1.86559 | 5.43660 |
| $u = -0.538411$<br>$a = 1.19609$<br>$b = 0.237195$ | 1.86559 | 5.43660 |

### III. $I_3^u = \langle b-1,\ u^3-2u^2+2a-2,\ u^4+2u^2+2\rangle$

**(i) Arc colorings**

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

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{2}u^3+u^2+1 \\ 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -\frac{1}{2}u^3+u^2+2 \\ 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ u^3+u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^3 \\ -u^3-u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -\frac{3}{2}u^3+u^2+2 \\ -u^3-u+1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1}{2}u^3+u^2+2 \\ 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^3 \\ u^3+u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^3 \\ u^3+u \end{pmatrix}$$

**(ii) Obstruction class** $= 1$

**(iii) Cusp Shapes** $= -4u^2+4$

**(iv) u-Polynomials at the component**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $u^4 + 2u^2 + 2$ |
| $c_2$ | $(u^2 + 2u + 2)^2$ |
| $c_3, c_4, c_8$<br>$c_9$ | $(u + 1)^4$ |
| $c_5, c_{10}$ | $(u - 1)^4$ |
| $c_7, c_{11}$ | $u^4 - 2u^2 + 2$ |

**(v) Riley Polynomials at the component**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $(y^2+2y+2)^2$ |
| $c_2$ | $(y^2+4)^2$ |
| $c_3, c_4, c_5$<br>$c_8, c_9, c_{10}$ | $(y-1)^4$ |
| $c_7, c_{11}$ | $(y^2-2y+2)^2$ |

**(vi) Complex Volumes and Cusp Shapes**

| Solutions to $I_3^u$ | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.455090 + 1.098680I$<br>$a = 0.77689 + 1.32180I$<br>$b = 1.00000$ | $0.82247 + 3.66386I$ | $8.00000 - 4.00000I$ |
| $u = 0.455090 - 1.098680I$<br>$a = 0.77689 - 1.32180I$<br>$b = 1.00000$ | $0.82247 - 3.66386I$ | $8.00000 + 4.00000I$ |
| $u = -0.455090 + 1.098680I$<br>$a = -0.776887 - 0.678203I$<br>$b = 1.00000$ | $0.82247 - 3.66386I$ | $8.00000 + 4.00000I$ |
| $u = -0.455090 - 1.098680I$<br>$a = -0.776887 + 0.678203I$<br>$b = 1.00000$ | $0.82247 + 3.66386I$ | $8.00000 - 4.00000I$ |

## IV. $I_1^v = \langle a,\ b+1,\ v+1 \rangle$

**(i) Arc colorings**

$$a_2 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

**(ii) Obstruction class** $= 1$

**(iii) Cusp Shapes** $= 12$

**(iv) u-Polynomials at the component**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_2, c_6$ $c_7, c_{11}$ | $u$ |
| $c_3, c_4, c_8$ $c_9$ | $u-1$ |
| $c_5, c_{10}$ | $u+1$ |

**(v) Riley Polynomials at the component**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_2, c_6$ <br> $c_7, c_{11}$ | $y$ |
| $c_3, c_4, c_5$ <br> $c_8, c_9, c_{10}$ | $y-1$ |

**(vi) Complex Volumes and Cusp Shapes**

| Solutions to $I_1^v$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $v = -1.00000$<br>$a = \quad 0$<br>$b = -1.00000$ | 3.28987 | 12.0000 |

## V. u-Polynomials

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $u(u^4+2u^2+2)(u^{15}-u^{14}+\cdots+2u-1)^2(u^{23}+3u^{22}+\cdots+6u+2)$ |
| $c_2$ | $u(u^2+2u+2)^2(u^{15}+7u^{14}+\cdots+4u^2-1)^2$ $\cdot(u^{23}+11u^{22}+\cdots-4u-4)$ |
| $c_3, c_4, c_8$ $c_9$ | $(u-1)(u+1)^4(u^{23}-u^{22}+\cdots+4u^2-1)(u^{30}-u^{29}+\cdots-6u-1)$ |
| $c_5, c_{10}$ | $((u-1)^4)(u+1)(u^{23}-u^{22}+\cdots+4u^2-1)(u^{30}-u^{29}+\cdots-6u-1)$ |
| $c_7$ | $u(u^4-2u^2+2)(u^{15}+u^{14}+\cdots-4u-1)^2$ $\cdot(u^{23}-3u^{22}+\cdots-166u+34)$ |
| $c_{11}$ | $u(u^4-2u^2+2)(u^{15}-5u^{14}+\cdots+12u^3-1)^2$ $\cdot(u^{23}+15u^{22}+\cdots+1790u+314)$ |

## VI. Riley Polynomials

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $y(y^2+2y+2)^2(y^{15}+7y^{14}+\cdots+4y^2-1)^2$ $\cdot(y^{23}+11y^{22}+\cdots-4y-4)$ |
| $c_2$ | $y(y^2+4)^2(y^{15}+3y^{14}+\cdots+8y-1)^2(y^{23}+3y^{22}+\cdots-208y-16)$ |
| $c_3, c_4, c_5$ $c_8, c_9, c_{10}$ | $((y-1)^5)(y^{23}-29y^{22}+\cdots+8y-1)(y^{30}-25y^{29}+\cdots+8y+1)$ |
| $c_7$ | $y(y^2-2y+2)^2(y^{15}-y^{14}+\cdots+16y-1)^2$ $\cdot(y^{23}-5y^{22}+\cdots+4028y-1156)$ |
| $c_{11}$ | $y(y^2-2y+2)^2(y^{15}+11y^{14}+\cdots-84y^2-1)^2$ $\cdot(y^{23}+7y^{22}+\cdots-489796y-98596)$ |