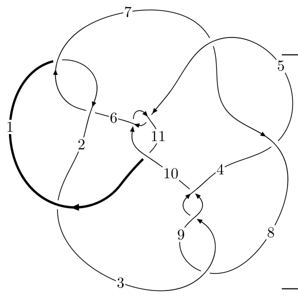
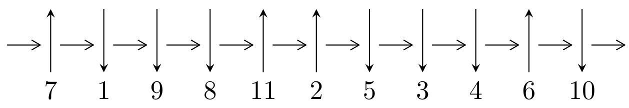
# $11a_{202}$ ($K11a_{202}$)




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

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

$$I_1^u = \langle 3u^{24} + 5u^{23} + \cdots + b + 5,\ -u^{24} - u^{23} + \cdots + 2a - 3,\ u^{25} + 3u^{24} + \cdots - u + 2 \rangle$$
$$I_2^u = \langle -u^{17}a + u^{17} + \cdots - a + 2,\ -2u^{17}a + 2u^{17} + \cdots - 3a + 5,\ u^{18} - u^{17} + \cdots + u - 1 \rangle$$
$$I_3^u = \langle -u^5 - u^4 + 2u^3 + 2u^2 + b - u,\ u^5 - 3u^3 + a + 2u,\ u^6 - 3u^4 + 2u^2 + 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 67 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.**

$$\boldsymbol{I_1^u = \langle 3u^{24}+5u^{23}+\cdots+b+5,\ -u^{24}-u^{23}+\cdots+2a-3,\ u^{25}+3u^{24}+\cdots-u+2\rangle}$$

**(i) Arc colorings**

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^3-2u \\ -u^3+u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{1}{2}u^{24}+\frac{1}{2}u^{23}+\cdots-\frac{5}{2}u+\frac{3}{2} \\ -3u^{24}-5u^{23}+\cdots+7u-5 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^2+1 \\ -u^4+2u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{1}{2}u^{24}-\frac{1}{2}u^{23}+\cdots+\frac{5}{2}u-\frac{3}{2} \\ 2u^{24}+3u^{23}+\cdots-3u+3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^6-3u^4+2u^2+1 \\ -u^6+2u^4-u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{3}{2}u^{24}+\frac{5}{2}u^{23}+\cdots-\frac{7}{2}u+\frac{5}{2} \\ u^{24}+2u^{23}+\cdots-u+1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{1}{2}u^{24}+\frac{1}{2}u^{23}+\cdots-\frac{3}{2}u+\frac{1}{2} \\ -2u^{24}-3u^{23}+\cdots+4u-3 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{1}{2}u^{24}+\frac{1}{2}u^{23}+\cdots-\frac{3}{2}u+\frac{1}{2} \\ -2u^{24}-3u^{23}+\cdots+4u-3 \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= 12u^{24}+22u^{23}-96u^{22}-160u^{21}+354u^{20}+456u^{19}-774u^{18}-512u^{17}+1026u^{16}-238u^{15}-600u^{14}+1204u^{13}-430u^{12}-908u^{11}+980u^{10}-316u^{9}-372u^{8}+598u^{7}-292u^{6}+150u^{4}-100u^{3}+72u^{2}-28u+18$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_5, c_6$<br>$c_{10}$ | $u^{25} + 5u^{23} + \cdots + 5u^2 + 1$ |
| $c_2, c_{11}$ | $u^{25} + 10u^{24} + \cdots - 10u - 1$ |
| $c_3, c_8, c_9$ | $u^{25} + 3u^{24} + \cdots - u + 2$ |
| $c_4, c_7$ | $u^{25} - 9u^{24} + \cdots + 151u - 22$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_5, c_6$ $c_{10}$ | $y^{25} + 10y^{24} + \cdots - 10y - 1$ |
| $c_2, c_{11}$ | $y^{25} + 18y^{24} + \cdots + 6y - 1$ |
| $c_3, c_8, c_9$ | $y^{25} - 21y^{24} + \cdots - 19y - 4$ |
| $c_4, c_7$ | $y^{25} + 15y^{24} + \cdots - 563y - 484$ |

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

| Solutions to $I_1^u$ | $\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.093170 + 0.381251I$<br>$a = 0.21753 - 1.41220I$<br>$b = 1.169580 - 0.560138I$ | $0.00199 + 6.23078I$ | $-4.13739 - 4.00981I$ |
| $u = 1.093170 - 0.381251I$<br>$a = 0.21753 + 1.41220I$<br>$b = 1.169580 + 0.560138I$ | $0.00199 - 6.23078I$ | $-4.13739 + 4.00981I$ |
| $u = 0.143356 + 0.825680I$<br>$a = 1.94580 - 0.73631I$<br>$b = -2.24518 + 0.45279I$ | $2.90521 - 10.60790I$ | $-1.48456 + 7.66724I$ |
| $u = 0.143356 - 0.825680I$<br>$a = 1.94580 + 0.73631I$<br>$b = -2.24518 - 0.45279I$ | $2.90521 + 10.60790I$ | $-1.48456 - 7.66724I$ |
| $u = 0.039360 + 0.824168I$<br>$a = -1.246860 + 0.327463I$<br>$b = 1.48748 + 0.14719I$ | $6.36489 + 0.77404I$ | $3.16430 - 2.08441I$ |
| $u = 0.039360 - 0.824168I$<br>$a = -1.246860 - 0.327463I$<br>$b = 1.48748 - 0.14719I$ | $6.36489 - 0.77404I$ | $3.16430 + 2.08441I$ |
| $u = -1.22317$<br>$a = 0.270576$<br>$b = -1.07819$ | $-2.64205$ | $-1.56220$ |
| $u = 0.607665 + 0.412689I$<br>$a = 1.67711 + 0.78738I$<br>$b = -0.641715 + 0.418679I$ | $-1.35523 - 6.21788I$ | $-4.83403 + 8.18700I$ |
| $u = 0.607665 - 0.412689I$<br>$a = 1.67711 - 0.78738I$<br>$b = -0.641715 - 0.418679I$ | $-1.35523 + 6.21788I$ | $-4.83403 - 8.18700I$ |
| $u = 1.226680 + 0.374932I$<br>$a = 0.111245 + 0.875220I$<br>$b = -0.651612 + 0.795102I$ | $2.70416 - 5.08779I$ | $-0.84739 + 5.77549I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.226680 - 0.374932I$<br>$a = 0.111245 - 0.875220I$<br>$b = -0.651612 - 0.795102I$ | $2.70416 + 5.08779I$ | $-0.84739 - 5.77549I$ |
| $u = 0.308716 + 0.611993I$<br>$a = -0.86404 - 1.36340I$<br>$b = 0.678982 + 0.816105I$ | $-0.38145 + 2.56549I$ | $-2.38682 - 2.55463I$ |
| $u = 0.308716 - 0.611993I$<br>$a = -0.86404 + 1.36340I$<br>$b = 0.678982 - 0.816105I$ | $-0.38145 - 2.56549I$ | $-2.38682 + 2.55463I$ |
| $u = -1.293350 + 0.365041I$<br>$a = 0.490950 - 0.568488I$<br>$b = -1.87489 - 0.82706I$ | $2.21088 + 3.50071I$ | $-0.821092 - 0.986963I$ |
| $u = -1.293350 - 0.365041I$<br>$a = 0.490950 + 0.568488I$<br>$b = -1.87489 + 0.82706I$ | $2.21088 - 3.50071I$ | $-0.821092 + 0.986963I$ |
| $u = 1.348970 + 0.191132I$<br>$a = 0.321151 + 0.095002I$<br>$b = 0.341623 + 0.269136I$ | $-4.86135 - 3.43962I$ | $-5.00084 + 5.92088I$ |
| $u = 1.348970 - 0.191132I$<br>$a = 0.321151 - 0.095002I$<br>$b = 0.341623 - 0.269136I$ | $-4.86135 + 3.43962I$ | $-5.00084 - 5.92088I$ |
| $u = -1.383170 + 0.239298I$<br>$a = -0.396095 - 0.636833I$<br>$b = -0.76363 + 1.37726I$ | $-5.69008 + 0.51087I$ | $-7.53558 + 3.07532I$ |
| $u = -1.383170 - 0.239298I$<br>$a = -0.396095 + 0.636833I$<br>$b = -0.76363 - 1.37726I$ | $-5.69008 - 0.51087I$ | $-7.53558 - 3.07532I$ |
| $u = -1.359100 + 0.357240I$<br>$a = -0.936093 + 0.861902I$<br>$b = 2.67364 + 1.62621I$ | $-1.8285 + 14.8711I$ | $-5.98898 - 9.38448I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-1.359100-0.357240I$<br>$a=-0.936093-0.861902I$<br>$b=\ \ 2.67364-1.62621I$ | $-1.8285-14.8711I$ | $-5.98898+9.38448I$ |
| $u=-1.41996+0.07613I$<br>$a=-0.691382+0.771202I$<br>$b=\ \ 1.38435-0.56025I$ | $-7.78094+7.61728I$ | $-9.88218-7.10707I$ |
| $u=-1.41996-0.07613I$<br>$a=-0.691382-0.771202I$<br>$b=\ \ 1.38435+0.56025I$ | $-7.78094-7.61728I$ | $-9.88218+7.10707I$ |
| $u=-0.200761+0.437718I$<br>$a=-0.514596-0.165982I$<br>$b=-0.019513+0.393038I$ | $-0.015654+1.044500I$ | $-0.46434-6.95411I$ |
| $u=-0.200761-0.437718I$<br>$a=-0.514596+0.165982I$<br>$b=-0.019513-0.393038I$ | $-0.015654-1.044500I$ | $-0.46434+6.95411I$ |

**II.**

$\boldsymbol{I_2^u = \langle -u^{17}a+u^{17}+\cdots-a+2,\ -2u^{17}a+2u^{17}+\cdots-3a+5,\ u^{18}-u^{17}+\cdots+u-1\rangle}$

**(i) Arc colorings**

$$a_3 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}u^3-2u\\-u^3+u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}a\\u^{17}a-u^{17}+\cdots+a-2\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-u^2+1\\-u^4+2u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}u^{17}a-u^{17}+\cdots+2a-2\\u^{17}a-u^{17}+\cdots+a-2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u^6-3u^4+2u^2+1\\-u^6+2u^4-u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}u^{17}a-2u^{17}+\cdots+2a-5\\-u^{17}+7u^{15}+\cdots-au+u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}u^{16}-7u^{14}+\cdots+a-1\\u^{17}a-u^{17}+\cdots+a-2\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}u^{16}-7u^{14}+\cdots+a-1\\u^{17}a-u^{17}+\cdots+a-2\end{pmatrix}$$

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

**(iii) Cusp Shapes** $= 4u^{15}-24u^{13}-4u^{12}+56u^{11}+20u^{10}-52u^9-36u^8-8u^7+20u^6+44u^5+12u^4-12u^3-12u^2-12u-6$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_5, c_6$ <br> $c_{10}$ | $u^{36} + u^{35} + \cdots + 2u + 5$ |
| $c_2, c_{11}$ | $u^{36} + 19u^{35} + \cdots + 136u + 25$ |
| $c_3, c_8, c_9$ | $(u^{18} - u^{17} + \cdots + u - 1)^2$ |
| $c_4, c_7$ | $(u^{18} + 3u^{17} + \cdots + 3u + 3)^2$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_5, c_6$<br>$c_{10}$ | $y^{36} + 19y^{35} + \cdots + 136y + 25$ |
| $c_2, c_{11}$ | $y^{36} - 5y^{35} + \cdots + 4204y + 625$ |
| $c_3, c_8, c_9$ | $(y^{18} - 15y^{17} + \cdots - 7y + 1)^2$ |
| $c_4, c_7$ | $(y^{18} + 13y^{17} + \cdots - 75y + 9)^2$ |

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

| Solutions to $I_2^u$ | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.099390 + 0.822674I$<br>$a = 1.010160 + 0.659261I$<br>$b = -1.204720 - 0.060446I$ | $5.09742 + 4.87394I$ | $1.52680 - 3.60136I$ |
| $u = -0.099390 + 0.822674I$<br>$a = -1.77185 - 0.50072I$<br>$b = 2.12693 + 0.43784I$ | $5.09742 + 4.87394I$ | $1.52680 - 3.60136I$ |
| $u = -0.099390 - 0.822674I$<br>$a = 1.010160 - 0.659261I$<br>$b = -1.204720 + 0.060446I$ | $5.09742 - 4.87394I$ | $1.52680 + 3.60136I$ |
| $u = -0.099390 - 0.822674I$<br>$a = -1.77185 + 0.50072I$<br>$b = 2.12693 - 0.43784I$ | $5.09742 - 4.87394I$ | $1.52680 + 3.60136I$ |
| $u = -1.160030 + 0.371279I$<br>$a = -0.005598 - 1.165270I$<br>$b = -1.48494 - 0.71912I$ | $1.85527 - 0.55896I$ | $-1.51114 - 0.25710I$ |
| $u = -1.160030 + 0.371279I$<br>$a = 0.193687 + 0.796364I$<br>$b = 0.184198 + 0.414383I$ | $1.85527 - 0.55896I$ | $-1.51114 - 0.25710I$ |
| $u = -1.160030 - 0.371279I$<br>$a = -0.005598 + 1.165270I$<br>$b = -1.48494 + 0.71912I$ | $1.85527 + 0.55896I$ | $-1.51114 + 0.25710I$ |
| $u = -1.160030 - 0.371279I$<br>$a = 0.193687 - 0.796364I$<br>$b = 0.184198 - 0.414383I$ | $1.85527 + 0.55896I$ | $-1.51114 + 0.25710I$ |
| $u = 0.064741 + 0.739221I$<br>$a = 1.151170 - 0.650197I$<br>$b = -2.00838 + 0.88685I$ | $-0.86368 - 1.88569I$ | $-1.68331 + 3.99357I$ |
| $u = 0.064741 + 0.739221I$<br>$a = -0.25126 - 2.22448I$<br>$b = 0.20114 + 1.41506I$ | $-0.86368 - 1.88569I$ | $-1.68331 + 3.99357I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.064741 - 0.739221I$<br>$a = 1.151170 + 0.650197I$<br>$b = -2.00838 - 0.88685I$ | $-0.86368 + 1.88569I$ | $-1.68331 - 3.99357I$ |
| $u = 0.064741 - 0.739221I$<br>$a = -0.25126 + 2.22448I$<br>$b = 0.20114 - 1.41506I$ | $-0.86368 + 1.88569I$ | $-1.68331 - 3.99357I$ |
| $u = 1.232890 + 0.279362I$<br>$a = 1.254980 - 0.181881I$<br>$b = -0.38174 + 1.40962I$ | $-4.41864 - 1.78695I$ | $-5.23943 - 0.02251I$ |
| $u = 1.232890 + 0.279362I$<br>$a = 0.162452 - 0.553286I$<br>$b = 2.09907 - 1.16052I$ | $-4.41864 - 1.78695I$ | $-5.23943 - 0.02251I$ |
| $u = 1.232890 - 0.279362I$<br>$a = 1.254980 + 0.181881I$<br>$b = -0.38174 - 1.40962I$ | $-4.41864 + 1.78695I$ | $-5.23943 + 0.02251I$ |
| $u = 1.232890 - 0.279362I$<br>$a = 0.162452 + 0.553286I$<br>$b = 2.09907 + 1.16052I$ | $-4.41864 + 1.78695I$ | $-5.23943 + 0.02251I$ |
| $u = -1.34147$<br>$a = -0.909316 + 0.569963I$<br>$b = 1.93594 + 0.69913I$ | $-9.12242$ | $-12.3720$ |
| $u = -1.34147$<br>$a = -0.909316 - 0.569963I$<br>$b = 1.93594 - 0.69913I$ | $-9.12242$ | $-12.3720$ |
| $u = -1.311620 + 0.317206I$<br>$a = -0.639151 + 0.570901I$<br>$b = 1.49141 + 2.61785I$ | $-5.17867 + 5.71427I$ | $-7.06596 - 6.05983I$ |
| $u = -1.311620 + 0.317206I$<br>$a = -1.126620 - 0.630098I$<br>$b = 0.05295 + 1.74084I$ | $-5.17867 + 5.71427I$ | $-7.06596 - 6.05983I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -1.311620 - 0.317206I$ <br> $a = -0.639151 - 0.570901I$ <br> $b = 1.49141 - 2.61785I$ | $-5.17867 - 5.71427I$ | $-7.06596 + 6.05983I$ |
| $u = -1.311620 - 0.317206I$ <br> $a = -1.126620 + 0.630098I$ <br> $b = 0.05295 - 1.74084I$ | $-5.17867 - 5.71427I$ | $-7.06596 + 6.05983I$ |
| $u = 1.354280 + 0.099636I$ <br> $a = 0.688151 + 0.512494I$ <br> $b = -0.934430 + 0.141070I$ | $-5.44315 - 3.22673I$ | $-7.05526 + 3.62956I$ |
| $u = 1.354280 + 0.099636I$ <br> $a = -0.240178 - 0.159767I$ <br> $b = 1.40470 + 0.41204I$ | $-5.44315 - 3.22673I$ | $-7.05526 + 3.62956I$ |
| $u = 1.354280 - 0.099636I$ <br> $a = 0.688151 - 0.512494I$ <br> $b = -0.934430 - 0.141070I$ | $-5.44315 + 3.22673I$ | $-7.05526 - 3.62956I$ |
| $u = 1.354280 - 0.099636I$ <br> $a = -0.240178 + 0.159767I$ <br> $b = 1.40470 - 0.41204I$ | $-5.44315 + 3.22673I$ | $-7.05526 - 3.62956I$ |
| $u = 1.333560 + 0.360812I$ <br> $a = 0.761590 + 0.869340I$ <br> $b = -2.17073 + 1.60538I$ | $0.60037 - 9.13509I$ | $-2.98695 + 5.86478I$ |
| $u = 1.333560 + 0.360812I$ <br> $a = -0.633768 - 0.345440I$ <br> $b = 1.83682 - 0.93179I$ | $0.60037 - 9.13509I$ | $-2.98695 + 5.86478I$ |
| $u = 1.333560 - 0.360812I$ <br> $a = 0.761590 - 0.869340I$ <br> $b = -2.17073 - 1.60538I$ | $0.60037 + 9.13509I$ | $-2.98695 - 5.86478I$ |
| $u = 1.333560 - 0.360812I$ <br> $a = -0.633768 + 0.345440I$ <br> $b = 1.83682 + 0.93179I$ | $0.60037 + 9.13509I$ | $-2.98695 - 5.86478I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.424636 + 0.422216I$<br>$a = 0.754958 - 0.611235I$<br>$b = -0.588599 + 0.366257I$ | $0.06375 + 1.57187I$ | $-1.80878 - 4.22070I$ |
| $u = -0.424636 + 0.422216I$<br>$a = -1.36523 + 0.46965I$<br>$b = 0.340053 + 0.339838I$ | $0.06375 + 1.57187I$ | $-1.80878 - 4.22070I$ |
| $u = -0.424636 - 0.422216I$<br>$a = 0.754958 + 0.611235I$<br>$b = -0.588599 - 0.366257I$ | $0.06375 - 1.57187I$ | $-1.80878 + 4.22070I$ |
| $u = -0.424636 - 0.422216I$<br>$a = -1.36523 - 0.46965I$<br>$b = 0.340053 - 0.339838I$ | $0.06375 - 1.57187I$ | $-1.80878 + 4.22070I$ |
| $u = 0.361873$<br>$a = 2.96583 + 1.11433I$<br>$b = -0.399690 + 0.777849I$ | $-3.91179$ | $-11.9800$ |
| $u = 0.361873$<br>$a = 2.96583 - 1.11433I$<br>$b = -0.399690 - 0.777849I$ | $-3.91179$ | $-11.9800$ |

**III.**

$$\boldsymbol{I_3^u = \langle -u^5 - u^4 + 2u^3 + 2u^2 + b - u,\ u^5 - 3u^3 + a + 2u,\ u^6 - 3u^4 + 2u^2 + 1\rangle}$$

**(i) Arc colorings**

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

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

**(iii) Cusp Shapes** $= 4u^4 - 8u^2 - 8$

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

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

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_5, c_6$<br>$c_{10}$ | $(y+1)^6$ |
| $c_2, c_{11}$ | $(y-1)^6$ |
| $c_3, c_8, c_9$ | $(y^3-3y^2+2y+1)^2$ |
| $c_4, c_7$ | $(y^3+y^2+2y+1)^2$ |

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

| Solutions to $I_3^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.307140 + 0.215080I$<br>$a = 0.744862 - 0.122561I$<br>$b = -0.87744 + 1.74486I$ | $-6.31400 - 2.82812I$ | $-11.50976 + 2.97945I$ |
| $u = 1.307140 - 0.215080I$<br>$a = 0.744862 + 0.122561I$<br>$b = -0.87744 - 1.74486I$ | $-6.31400 + 2.82812I$ | $-11.50976 - 2.97945I$ |
| $u = -1.307140 + 0.215080I$<br>$a = -0.744862 - 0.122561I$<br>$b = -0.877439 + 0.255138I$ | $-6.31400 + 2.82812I$ | $-11.50976 - 2.97945I$ |
| $u = -1.307140 - 0.215080I$<br>$a = -0.744862 + 0.122561I$<br>$b = -0.877439 - 0.255138I$ | $-6.31400 - 2.82812I$ | $-11.50976 + 2.97945I$ |
| $u = 0.569840I$<br>$a = -1.75488I$<br>$b = 0.754878 + 1.000000I$ | $-2.17641$ | $-4.98050$ |
| $u = -0.569840I$<br>$a = 1.75488I$<br>$b = 0.754878 - 1.000000I$ | $-2.17641$ | $-4.98050$ |

**IV. u-Polynomials**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_5, c_6$ $c_{10}$ | $((u^2+1)^3)(u^{25}+5u^{23}+\cdots+5u^2+1)(u^{36}+u^{35}+\cdots+2u+5)$ |
| $c_2, c_{11}$ | $((u+1)^6)(u^{25}+10u^{24}+\cdots-10u-1)(u^{36}+19u^{35}+\cdots+136u+25)$ |
| $c_3, c_8, c_9$ | $(u^6-3u^4+2u^2+1)(u^{18}-u^{17}+\cdots+u-1)^2(u^{25}+3u^{24}+\cdots-u+2)$ |
| $c_4, c_7$ | $(u^6+u^4+2u^2+1)(u^{18}+3u^{17}+\cdots+3u+3)^2$ $\cdot(u^{25}-9u^{24}+\cdots+151u-22)$ |

**V. Riley Polynomials**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_5, c_6$ $c_{10}$ | $((y+1)^6)(y^{25}+10y^{24}+\cdots-10y-1)(y^{36}+19y^{35}+\cdots+136y+25)$ |
| $c_2, c_{11}$ | $((y-1)^6)(y^{25}+18y^{24}+\cdots+6y-1)(y^{36}-5y^{35}+\cdots+4204y+625)$ |
| $c_3, c_8, c_9$ | $((y^3-3y^2+2y+1)^2)(y^{18}-15y^{17}+\cdots-7y+1)^2$ $\cdot(y^{25}-21y^{24}+\cdots-19y-4)$ |
| $c_4, c_7$ | $((y^3+y^2+2y+1)^2)(y^{18}+13y^{17}+\cdots-75y+9)^2$ $\cdot(y^{25}+15y^{24}+\cdots-563y-484)$ |