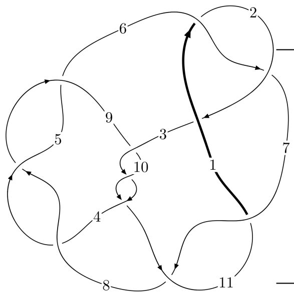
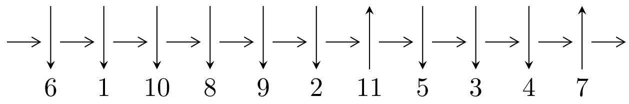
# $11a_{223}$ ($K11a_{223}$)




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

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

$$I_1^u = \langle -u^{19} + 2u^{18} + \cdots + b + 1,\ 5u^{19} - 11u^{18} + \cdots + 2a - 10,\ u^{20} - 3u^{19} + \cdots - 6u + 2\rangle$$

$$I_2^u = \langle -u^{11}a + 10u^{11} + \cdots + 2a - 13,\ -2u^{10}a + u^{11} + \cdots + a^2 + 1,$$
$$u^{12} + u^{11} - 3u^{10} - 4u^9 + 3u^8 + 6u^7 + 2u^6 - 2u^5 - 4u^4 - 3u^3 + u^2 + 2u + 1\rangle$$

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

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

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 49 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.** $\boldsymbol{I^u_1 =}$
$\boldsymbol{\langle -u^{19}+2u^{18}+\cdots+b+1,\ 5u^{19}-11u^{18}+\cdots+2a-10,\ u^{20}-3u^{19}+\cdots-6u+2\rangle}$

**(i) Arc colorings**

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^3 \\ -u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{5}{2}u^{19} + \frac{11}{2}u^{18} + \cdots - 11u + 5 \\ u^{19} - 2u^{18} + \cdots + 4u - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{3}{2}u^{19} + \frac{7}{2}u^{18} + \cdots - 7u + 3 \\ u^{19} - 2u^{18} + \cdots + 3u - 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{1}{2}u^{19} + \frac{3}{2}u^{18} + \cdots - 3u + 2 \\ u^{18} - u^{17} + \cdots - 2u + 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^6 - u^4 + 1 \\ u^8 - 2u^6 + 2u^4 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{3}{2}u^{19} + \frac{7}{2}u^{18} + \cdots - 7u + 3 \\ -u^{19} + 3u^{18} + \cdots - 6u + 3 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= 2u^{19} - 12u^{17} + 6u^{16} + 32u^{15} - 30u^{14} - 34u^{13} + 66u^{12} - 14u^{11} - 58u^{10} + 78u^9 - 12u^8 - 62u^7 + 68u^6 - 8u^5 - 32u^4 + 38u^3 - 8u^2 - 2u$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $u^{20} - 3u^{19} + \cdots - 6u + 2$ |
| $c_2$ | $u^{20} + 11u^{19} + \cdots + 4u + 4$ |
| $c_3, c_4, c_5$<br>$c_8, c_9, c_{10}$ | $u^{20} + u^{19} + \cdots - 2u - 1$ |
| $c_7, c_{11}$ | $u^{20} - 9u^{19} + \cdots + 110u - 22$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $y^{20} - 11y^{19} + \cdots - 4y + 4$ |
| $c_2$ | $y^{20} - 3y^{19} + \cdots - 208y + 16$ |
| $c_3, c_4, c_5$<br>$c_8, c_9, c_{10}$ | $y^{20} - 27y^{19} + \cdots - 10y + 1$ |
| $c_7, c_{11}$ | $y^{20} + 17y^{19} + \cdots - 4004y + 484$ |

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

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.544915 + 0.735723I$<br>$a = -0.396672 - 0.140253I$<br>$b = 1.50718 - 0.07179I$ | $-8.11263 + 1.41331I$ | $-12.03617 - 0.10296I$ |
| $u = 0.544915 - 0.735723I$<br>$a = -0.396672 + 0.140253I$<br>$b = 1.50718 + 0.07179I$ | $-8.11263 - 1.41331I$ | $-12.03617 + 0.10296I$ |
| $u = 0.128827 + 0.901492I$<br>$a = -0.623064 - 0.737924I$<br>$b = -1.60887 + 0.30371I$ | $-14.6659 + 7.5175I$ | $-13.03534 - 3.27786I$ |
| $u = 0.128827 - 0.901492I$<br>$a = -0.623064 + 0.737924I$<br>$b = -1.60887 - 0.30371I$ | $-14.6659 - 7.5175I$ | $-13.03534 + 3.27786I$ |
| $u = 0.773452 + 0.404695I$<br>$a = 0.591002 - 0.705976I$<br>$b = 0.108607 + 0.523595I$ | $0.87704 - 1.78379I$ | $-2.58390 + 5.68445I$ |
| $u = 0.773452 - 0.404695I$<br>$a = 0.591002 + 0.705976I$<br>$b = 0.108607 - 0.523595I$ | $0.87704 + 1.78379I$ | $-2.58390 - 5.68445I$ |
| $u = 0.977557 + 0.624357I$<br>$a = -0.48691 + 1.67916I$<br>$b = -1.50584 - 0.14245I$ | $-9.37386 - 6.54808I$ | $-13.7315 + 5.5285I$ |
| $u = 0.977557 - 0.624357I$<br>$a = -0.48691 - 1.67916I$<br>$b = -1.50584 + 0.14245I$ | $-9.37386 + 6.54808I$ | $-13.7315 - 5.5285I$ |
| $u = -1.21457$<br>$a = -2.22945$<br>$b = -1.62522$ | $-14.1194$ | $-17.9240$ |
| $u = -1.145210 + 0.438306I$<br>$a = -0.641824 - 0.515615I$<br>$b = -0.535707 - 0.310794I$ | $-4.07199 + 2.60865I$ | $-11.03085 + 0.93775I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -1.145210 - 0.438306I$<br>$a = -0.641824 + 0.515615I$<br>$b = -0.535707 + 0.310794I$ | $-4.07199 - 2.60865I$ | $-11.03085 - 0.93775I$ |
| $u = 1.160540 + 0.458172I$<br>$a = -1.261220 + 0.382851I$<br>$b = -0.503696 - 0.478862I$ | $-3.93117 - 5.51600I$ | $-10.44810 + 8.22749I$ |
| $u = 1.160540 - 0.458172I$<br>$a = -1.261220 - 0.382851I$<br>$b = -0.503696 + 0.478862I$ | $-3.93117 + 5.51600I$ | $-10.44810 - 8.22749I$ |
| $u = -0.695075$<br>$a = 0.614797$<br>$b = 0.332547$ | $-0.859562$ | $-12.8980$ |
| $u = -1.280150 + 0.384189I$<br>$a = 2.09625 + 0.60113I$<br>$b = 1.65612 + 0.28210I$ | $-19.0845 - 3.0881I$ | $-16.9887 + 0.4542I$ |
| $u = -1.280150 - 0.384189I$<br>$a = 2.09625 - 0.60113I$<br>$b = 1.65612 - 0.28210I$ | $-19.0845 + 3.0881I$ | $-16.9887 - 0.4542I$ |
| $u = 0.058790 + 0.660109I$<br>$a = 0.455681 + 0.359674I$<br>$b = 0.418244 - 0.389912I$ | $-0.84744 + 1.30386I$ | $-6.93259 - 5.24353I$ |
| $u = 0.058790 - 0.660109I$<br>$a = 0.455681 - 0.359674I$<br>$b = 0.418244 + 0.389912I$ | $-0.84744 - 1.30386I$ | $-6.93259 + 5.24353I$ |
| $u = 1.236100 + 0.531142I$<br>$a = 2.07408 - 1.71089I$<br>$b = 1.61029 + 0.34268I$ | $-18.0142 - 12.6981I$ | $-15.8020 + 6.4148I$ |
| $u = 1.236100 - 0.531142I$<br>$a = 2.07408 + 1.71089I$<br>$b = 1.61029 - 0.34268I$ | $-18.0142 + 12.6981I$ | $-15.8020 - 6.4148I$ |

**II.** $\boldsymbol{I_2^u} =$
$\boldsymbol{\langle -u^{11}a+10u^{11}+\cdots+2a-13,\ -2u^{10}a+u^{11}+\cdots+a^2+1,\ u^{12}+u^{11}+\cdots+2u+1\rangle}$

**(i) Arc colorings**

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^3 \\ -u^3+u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ \frac{1}{14}u^{11}a - \frac{5}{7}u^{11} + \cdots - \frac{1}{7}a + \frac{13}{14} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{1}{14}u^{11}a - \frac{2}{7}u^{11} + \cdots + \frac{8}{7}a + \frac{1}{14} \\ -0.214286au^{11} - 1.35714u^{11} + \cdots - 0.0714286a + 0.714286 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.285714au^{11} - 0.357143u^{11} + \cdots + 0.928571a + 1.21429 \\ -0.357143au^{11} + 0.0714286u^{11} + \cdots + 0.214286a - 1.14286 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^6 - u^4 + 1 \\ u^8 - 2u^6 + 2u^4 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{14}u^{11}a - \frac{2}{7}u^{11} + \cdots + \frac{8}{7}a + \frac{1}{14} \\ \frac{1}{14}u^{11}a + \frac{2}{7}u^{11} + \cdots - \frac{1}{7}a - \frac{15}{14} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

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

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

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $(u^{12} + u^{11} + \cdots + 2u + 1)^2$ |
| $c_2$ | $(u^{12} + 7u^{11} + \cdots + 2u + 1)^2$ |
| $c_3, c_4, c_5$<br>$c_8, c_9, c_{10}$ | $u^{24} + u^{23} + \cdots - 10u + 5$ |
| $c_7, c_{11}$ | $(u^{12} + 3u^{11} + \cdots + 2u + 1)^2$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $(y^{12} - 7y^{11} + \cdots - 2y + 1)^2$ |
| $c_2$ | $(y^{12} - 3y^{11} + \cdots + 6y + 1)^2$ |
| $c_3, c_4, c_5$<br>$c_8, c_9, c_{10}$ | $y^{24} - 21y^{23} + \cdots - 220y + 25$ |
| $c_7, c_{11}$ | $(y^{12} + 13y^{11} + \cdots + 6y + 1)^2$ |

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

| Solutions to $I_2^u$ | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.961384 + 0.208970I$<br>$a = 0.506127 + 0.593369I$<br>$b = 0.915862 - 0.401943I$ | $-5.02961 - 0.71593I$ | $-15.9565 + 0.6487I$ |
| $u = 0.961384 + 0.208970I$<br>$a = -2.66748 + 1.31736I$<br>$b = -1.242690 - 0.150848I$ | $-5.02961 - 0.71593I$ | $-15.9565 + 0.6487I$ |
| $u = 0.961384 - 0.208970I$<br>$a = 0.506127 - 0.593369I$<br>$b = 0.915862 + 0.401943I$ | $-5.02961 + 0.71593I$ | $-15.9565 - 0.6487I$ |
| $u = 0.961384 - 0.208970I$<br>$a = -2.66748 - 1.31736I$<br>$b = -1.242690 + 0.150848I$ | $-5.02961 + 0.71593I$ | $-15.9565 - 0.6487I$ |
| $u = -0.958024 + 0.460561I$<br>$a = -0.002595 + 0.970301I$<br>$b = 0.317703 - 0.537023I$ | $-3.21312 + 4.24921I$ | $-9.82351 - 6.98310I$ |
| $u = -0.958024 + 0.460561I$<br>$a = -1.13256 - 1.76796I$<br>$b = -1.233460 + 0.149435I$ | $-3.21312 + 4.24921I$ | $-9.82351 - 6.98310I$ |
| $u = -0.958024 - 0.460561I$<br>$a = -0.002595 - 0.970301I$<br>$b = 0.317703 + 0.537023I$ | $-3.21312 - 4.24921I$ | $-9.82351 + 6.98310I$ |
| $u = -0.958024 - 0.460561I$<br>$a = -1.13256 + 1.76796I$<br>$b = -1.233460 - 0.149435I$ | $-3.21312 - 4.24921I$ | $-9.82351 + 6.98310I$ |
| $u = -0.049813 + 0.844037I$<br>$a = -1.205190 + 0.406247I$<br>$b = -1.51479 - 0.10395I$ | $-7.33005 - 3.01307I$ | $-11.36825 + 2.63251I$ |
| $u = -0.049813 + 0.844037I$<br>$a = 0.190483 - 0.652317I$<br>$b = 0.619350 + 0.907491I$ | $-7.33005 - 3.01307I$ | $-11.36825 + 2.63251I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.049813 - 0.844037I$<br>$a = -1.205190 - 0.406247I$<br>$b = -1.51479 + 0.10395I$ | $-7.33005 + 3.01307I$ | $-11.36825 - 2.63251I$ |
| $u = -0.049813 - 0.844037I$<br>$a = 0.190483 + 0.652317I$<br>$b = 0.619350 - 0.907491I$ | $-7.33005 + 3.01307I$ | $-11.36825 - 2.63251I$ |
| $u = 1.238640 + 0.435356I$<br>$a = -0.178745 + 0.729514I$<br>$b = -0.704482 + 0.930610I$ | $-11.20510 - 1.48234I$ | $-15.1526 + 0.6754I$ |
| $u = 1.238640 + 0.435356I$<br>$a = 2.56411 - 0.92305I$<br>$b = 1.55418 - 0.05622I$ | $-11.20510 - 1.48234I$ | $-15.1526 + 0.6754I$ |
| $u = 1.238640 - 0.435356I$<br>$a = -0.178745 - 0.729514I$<br>$b = -0.704482 - 0.930610I$ | $-11.20510 + 1.48234I$ | $-15.1526 - 0.6754I$ |
| $u = 1.238640 - 0.435356I$<br>$a = 2.56411 + 0.92305I$<br>$b = 1.55418 + 0.05622I$ | $-11.20510 + 1.48234I$ | $-15.1526 - 0.6754I$ |
| $u = -1.228550 + 0.484706I$<br>$a = -1.41739 - 0.27157I$<br>$b = -0.584122 + 0.976162I$ | $-10.84800 + 7.80134I$ | $-14.3661 - 5.6398I$ |
| $u = -1.228550 + 0.484706I$<br>$a = 2.49284 + 1.50692I$<br>$b = 1.54701 - 0.14731I$ | $-10.84800 + 7.80134I$ | $-14.3661 - 5.6398I$ |
| $u = -1.228550 - 0.484706I$<br>$a = -1.41739 + 0.27157I$<br>$b = -0.584122 - 0.976162I$ | $-10.84800 - 7.80134I$ | $-14.3661 + 5.6398I$ |
| $u = -1.228550 - 0.484706I$<br>$a = 2.49284 - 1.50692I$<br>$b = 1.54701 + 0.14731I$ | $-10.84800 - 7.80134I$ | $-14.3661 + 5.6398I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.463636 + 0.458719I$<br>$a = 1.49987 + 0.51998I$<br>$b = -0.312209 - 0.212773I$ | $-1.85256 - 0.35310I$ | $-5.33308 + 0.62981I$ |
| $u = -0.463636 + 0.458719I$<br>$a = -0.149462 - 0.021454I$<br>$b = 1.137650 + 0.055627I$ | $-1.85256 - 0.35310I$ | $-5.33308 + 0.62981I$ |
| $u = -0.463636 - 0.458719I$<br>$a = 1.49987 - 0.51998I$<br>$b = -0.312209 + 0.212773I$ | $-1.85256 + 0.35310I$ | $-5.33308 - 0.62981I$ |
| $u = -0.463636 - 0.458719I$<br>$a = -0.149462 + 0.021454I$<br>$b = 1.137650 - 0.055627I$ | $-1.85256 + 0.35310I$ | $-5.33308 - 0.62981I$ |

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

**(i) Arc colorings**

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

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

**(iii) Cusp Shapes** $= 4u^2 - 20$

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

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

**(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 $I^u_3$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = \phantom{-}1.098680 + 0.455090I$<br>$a = -1.321800 + 0.223113I$<br>$b = -1.00000$ | $-5.75727 - 3.66386I$ | $-16.0000 + 4.0000I$ |
| $u = \phantom{-}1.098680 - 0.455090I$<br>$a = -1.321800 - 0.223113I$<br>$b = -1.00000$ | $-5.75727 + 3.66386I$ | $-16.0000 - 4.0000I$ |
| $u = -1.098680 + 0.455090I$<br>$a = -0.67820 - 1.77689I$<br>$b = -1.00000$ | $-5.75727 + 3.66386I$ | $-16.0000 - 4.0000I$ |
| $u = -1.098680 - 0.455090I$<br>$a = -0.67820 + 1.77689I$<br>$b = -1.00000$ | $-5.75727 - 3.66386I$ | $-16.0000 + 4.0000I$ |

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

**(i) Arc colorings**

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

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

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

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

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

**(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 $I^v_1$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $v = -1.00000$<br>$a = 0$<br>$b = 1.00000$ | $-3.28987$ | $-12.0000$ |

## V. u-Polynomials

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $u(u^4-2u^2+2)(u^{12}+u^{11}+\cdots+2u+1)^2(u^{20}-3u^{19}+\cdots-6u+2)$ |
| $c_2$ | $u(u^2+2u+2)^2(u^{12}+7u^{11}+\cdots+2u+1)^2$ $\cdot\,(u^{20}+11u^{19}+\cdots+4u+4)$ |
| $c_3, c_8$ | $((u-1)^4)(u+1)(u^{20}+u^{19}+\cdots-2u-1)(u^{24}+u^{23}+\cdots-10u+5)$ |
| $c_4, c_5, c_9$ $c_{10}$ | $(u-1)(u+1)^4(u^{20}+u^{19}+\cdots-2u-1)(u^{24}+u^{23}+\cdots-10u+5)$ |
| $c_7, c_{11}$ | $u(u^4+2u^2+2)(u^{12}+3u^{11}+\cdots+2u+1)^2$ $\cdot\,(u^{20}-9u^{19}+\cdots+110u-22)$ |

## VI. Riley Polynomials

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $y(y^2-2y+2)^2(y^{12}-7y^{11}+\cdots-2y+1)^2$<br>$\cdot(y^{20}-11y^{19}+\cdots-4y+4)$ |
| $c_2$ | $y(y^2+4)^2(y^{12}-3y^{11}+\cdots+6y+1)^2(y^{20}-3y^{19}+\cdots-208y+16)$ |
| $c_3, c_4, c_5$<br>$c_8, c_9, c_{10}$ | $((y-1)^5)(y^{20}-27y^{19}+\cdots-10y+1)(y^{24}-21y^{23}+\cdots-220y+25)$ |
| $c_7, c_{11}$ | $y(y^2+2y+2)^2(y^{12}+13y^{11}+\cdots+6y+1)^2$<br>$\cdot(y^{20}+17y^{19}+\cdots-4004y+484)$ |