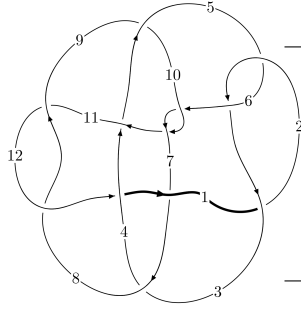
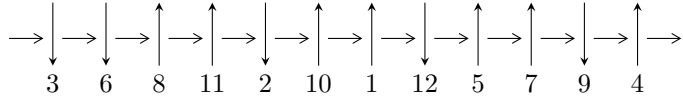


12a₀₃₂₅ (K12a₀₃₂₅)



A knot diagram¹

Linearized knot diagram



Solving Sequence

$$2,6 \xrightarrow{c_2} 3,10 \xrightarrow{c_6} 7 \xrightarrow{c_{10}} 11 \xrightarrow{c_1} 1 \xrightarrow{c_7} 8 \xrightarrow{c_5} 5 \xrightarrow{c_4} 4 \xrightarrow{c_9} 9 \xrightarrow{c_{12}} 12 \rightsquigarrow c_3, c_8, c_{11}$$

Ideals for irreducible components² of X_{par}

$$I_1^u = \langle 2.44329 \times 10^{482} u^{152} - 7.61384 \times 10^{482} u^{151} + \dots + 5.78608 \times 10^{483} b - 1.24996 \times 10^{485}, \\ - 2.64221 \times 10^{485} u^{152} + 9.59872 \times 10^{485} u^{151} + \dots + 4.66358 \times 10^{486} a - 5.87365 \times 10^{487}, \\ u^{153} - 4u^{152} + \dots - 1308u + 403 \rangle$$

$$I_2^u = \langle -151829464u^{34} - 651172393u^{33} + \dots + 1552697b + 149127254, \\ - 32108261u^{34} - 103994396u^{33} + \dots + 1552697a - 12080656, u^{35} + 5u^{34} + \dots - 4u - 1 \rangle$$

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

$$I_4^u = \langle -a^3b - a^3 + b^2 - 2ba + 3a^2 + a - 2, a^4 - a^2 + 1, u - 1 \rangle$$

$$I_5^u = \langle -u^8 + 2u^7 - 2u^4 + b + u, -u^8 + 2u^7 + u^6 - 2u^5 - 3u^4 + 2u^3 + 2u^2 + a - 1, \\ u^9 - 2u^8 - u^7 + 2u^6 + 3u^5 - 2u^4 - 2u^3 + u + 1 \rangle$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 207 representations.

¹The 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>).

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

$$\mathbf{I. } J_1^u = \langle 2.44 \times 10^{482} u^{152} - 7.61 \times 10^{482} u^{151} + \dots + 5.79 \times 10^{483} b - 1.25 \times 10^{485}, -2.64 \times 10^{485} u^{152} + 9.60 \times 10^{485} u^{151} + \dots + 4.66 \times 10^{486} a - 5.87 \times 10^{487}, u^{153} - 4u^{152} + \dots - 1308u + 403 \rangle$$

(i) Arc colorings

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

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

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

$$a_{10} = \begin{pmatrix} 0.0566562u^{152} - 0.205823u^{151} + \dots - 38.0727u + 12.5947 \\ -0.0422271u^{152} + 0.131589u^{151} + \dots - 54.6888u + 21.6029 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.00265909u^{152} - 0.00685318u^{151} + \dots - 17.1575u + 4.86894 \\ 0.00422906u^{152} + 0.00397335u^{151} + \dots + 9.07092u - 3.66335 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.0405739u^{152} + 0.158089u^{151} + \dots + 92.2622u - 8.25737 \\ -0.0194224u^{152} + 0.0553301u^{151} + \dots + 12.8460u - 10.3832 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -0.0307886u^{152} + 0.0997291u^{151} + \dots - 40.0301u + 9.22919 \\ -0.0327039u^{152} + 0.116997u^{151} + \dots - 26.8406u + 10.0730 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.0341103u^{152} + 0.146828u^{151} + \dots + 72.8214u + 10.7106 \\ -0.0262821u^{152} + 0.106569u^{151} + \dots - 17.8242u + 20.3022 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.107309u^{152} - 0.383646u^{151} + \dots - 1.89981u - 10.8282 \\ 0.00842534u^{152} - 0.0462346u^{151} + \dots - 18.5159u - 1.82006 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.00158834u^{152} + 0.0137909u^{151} + \dots + 82.2526u - 20.2425 \\ 0.0437817u^{152} - 0.135616u^{151} + \dots + 54.3146u - 23.0555 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = $0.179165u^{152} - 0.633170u^{151} + \dots + 417.974u - 142.860$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{153} + 56u^{152} + \dots + 5203262u + 162409$
c_2, c_5	$u^{153} + 4u^{152} + \dots - 1308u - 403$
c_3	$u^{153} + 4u^{152} + \dots + 3298135u + 149921$
c_4	$u^{153} + 2u^{152} + \dots - 590459u + 127561$
c_6, c_{10}	$u^{153} + 4u^{152} + \dots - 32672u - 1744$
c_7	$u^{153} - 4u^{152} + \dots - 54959u - 3812$
c_8, c_{11}	$u^{153} - 11u^{152} + \dots + 444u - 9$
c_9	$u^{153} - 36u^{151} + \dots - 415921821u - 28550563$
c_{12}	$u^{153} + 12u^{152} + \dots - 183u + 11$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{153} + 88y^{152} + \dots + 4445192262174y - 26376683281$
c_2, c_5	$y^{153} - 56y^{152} + \dots + 5203262y - 162409$
c_3	$y^{153} - 58y^{152} + \dots + 6128533920791y - 22476306241$
c_4	$y^{153} - 22y^{152} + \dots + 398065340131y - 16271808721$
c_6, c_{10}	$y^{153} - 96y^{152} + \dots + 45684864y - 3041536$
c_7	$y^{153} - 4y^{152} + \dots + 642535585y - 14531344$
c_8, c_{11}	$y^{153} + 127y^{152} + \dots + 10368y - 81$
c_9	$y^{153} - 72y^{152} + \dots + 144574949507127535y - 815134647616969$
c_{12}	$y^{153} - 16y^{152} + \dots + 16637y - 121$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.675420 + 0.737717I$		
$a = 1.31203 + 0.65867I$	$3.56258 - 1.68630I$	0
$b = 0.192324 - 0.026203I$		
$u = -0.675420 - 0.737717I$		
$a = 1.31203 - 0.65867I$	$3.56258 + 1.68630I$	0
$b = 0.192324 + 0.026203I$		
$u = 0.712633 + 0.692997I$		
$a = -0.853056 - 0.873264I$	$-0.06386 + 2.09461I$	0
$b = -0.267587 - 1.229830I$		
$u = 0.712633 - 0.692997I$		
$a = -0.853056 + 0.873264I$	$-0.06386 - 2.09461I$	0
$b = -0.267587 + 1.229830I$		
$u = 0.833577 + 0.529608I$		
$a = -0.808363 + 0.906087I$	$1.92792 - 4.14574I$	0
$b = 0.30919 + 1.83699I$		
$u = 0.833577 - 0.529608I$		
$a = -0.808363 - 0.906087I$	$1.92792 + 4.14574I$	0
$b = 0.30919 - 1.83699I$		
$u = 0.726189 + 0.712147I$		
$a = 1.234100 - 0.684681I$	$9.74457 + 4.78074I$	0
$b = -0.500158 + 0.082418I$		
$u = 0.726189 - 0.712147I$		
$a = 1.234100 + 0.684681I$	$9.74457 - 4.78074I$	0
$b = -0.500158 - 0.082418I$		
$u = -0.848864 + 0.565331I$		
$a = 1.117470 - 0.856923I$	$-0.424170 - 0.231230I$	0
$b = 0.43012 - 1.41259I$		
$u = -0.848864 - 0.565331I$		
$a = 1.117470 + 0.856923I$	$-0.424170 + 0.231230I$	0
$b = 0.43012 + 1.41259I$		

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.637354 + 0.807506I$ $a = 0.866602 + 0.671451I$ $b = -0.126080 + 1.155340I$	$5.44000 + 7.90600I$	0
$u = 0.637354 - 0.807506I$ $a = 0.866602 - 0.671451I$ $b = -0.126080 - 1.155340I$	$5.44000 - 7.90600I$	0
$u = -0.750041 + 0.616302I$ $a = -1.241710 + 0.108581I$ $b = -0.256077 + 1.381250I$	$2.67326 - 0.74208I$	0
$u = -0.750041 - 0.616302I$ $a = -1.241710 - 0.108581I$ $b = -0.256077 - 1.381250I$	$2.67326 + 0.74208I$	0
$u = -0.658054 + 0.804069I$ $a = -0.608800 + 0.419900I$ $b = 0.433604 + 0.871465I$	$6.01531 + 0.24800I$	0
$u = -0.658054 - 0.804069I$ $a = -0.608800 - 0.419900I$ $b = 0.433604 - 0.871465I$	$6.01531 - 0.24800I$	0
$u = 0.797105 + 0.686679I$ $a = -1.26136 + 0.71763I$ $b = 0.022369 + 0.437942I$	$5.44169 - 1.59304I$	0
$u = 0.797105 - 0.686679I$ $a = -1.26136 - 0.71763I$ $b = 0.022369 - 0.437942I$	$5.44169 + 1.59304I$	0
$u = -0.911731 + 0.552948I$ $a = -0.477581 + 1.096580I$ $b = 0.07984 + 1.80339I$	$-0.60988 + 4.66390I$	0
$u = -0.911731 - 0.552948I$ $a = -0.477581 - 1.096580I$ $b = 0.07984 - 1.80339I$	$-0.60988 - 4.66390I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.044140 + 0.221555I$		
$a = 0.234186 + 0.137129I$	$-0.419188 + 0.000601I$	0
$b = 0.900973 - 0.502033I$		
$u = 1.044140 - 0.221555I$		
$a = 0.234186 - 0.137129I$	$-0.419188 - 0.000601I$	0
$b = 0.900973 + 0.502033I$		
$u = 0.223508 + 0.900376I$		
$a = 0.048702 - 1.141970I$	$1.69039 - 3.74324I$	0
$b = -0.098374 - 0.290094I$		
$u = 0.223508 - 0.900376I$		
$a = 0.048702 + 1.141970I$	$1.69039 + 3.74324I$	0
$b = -0.098374 + 0.290094I$		
$u = 1.046970 + 0.275240I$		
$a = -0.612920 + 0.491990I$	$-2.13134 - 2.48634I$	0
$b = -1.94412 + 0.94083I$		
$u = 1.046970 - 0.275240I$		
$a = -0.612920 - 0.491990I$	$-2.13134 + 2.48634I$	0
$b = -1.94412 - 0.94083I$		
$u = 0.855023 + 0.329474I$		
$a = -0.44008 + 1.38498I$	$-1.65566 - 4.20561I$	0
$b = 0.14747 + 1.64774I$		
$u = 0.855023 - 0.329474I$		
$a = -0.44008 - 1.38498I$	$-1.65566 + 4.20561I$	0
$b = 0.14747 - 1.64774I$		
$u = -0.908445 + 0.098730I$		
$a = -1.211430 - 0.055199I$	$5.43502 - 5.17729I$	0
$b = -2.53684 + 0.64359I$		
$u = -0.908445 - 0.098730I$		
$a = -1.211430 + 0.055199I$	$5.43502 + 5.17729I$	0
$b = -2.53684 - 0.64359I$		

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.042560 + 0.314422I$ $a = 0.005034 - 0.658412I$ $b = -0.629969 - 1.128490I$	$-1.84749 - 0.93407I$	0
$u = 1.042560 - 0.314422I$ $a = 0.005034 + 0.658412I$ $b = -0.629969 + 1.128490I$	$-1.84749 + 0.93407I$	0
$u = 0.771627 + 0.775380I$ $a = 0.299982 + 0.523125I$ $b = 0.14897 + 1.55115I$	$4.97087 - 5.83091I$	0
$u = 0.771627 - 0.775380I$ $a = 0.299982 - 0.523125I$ $b = 0.14897 - 1.55115I$	$4.97087 + 5.83091I$	0
$u = 0.891588 + 0.126622I$ $a = -1.008690 - 0.627616I$ $b = -1.53323 - 0.42808I$	$-1.37826 + 1.95591I$	0
$u = 0.891588 - 0.126622I$ $a = -1.008690 + 0.627616I$ $b = -1.53323 + 0.42808I$	$-1.37826 - 1.95591I$	0
$u = 0.870067 + 0.203606I$ $a = -1.137610 - 0.247333I$ $b = 0.18143 - 1.88250I$	$-1.52748 + 1.01810I$	0
$u = 0.870067 - 0.203606I$ $a = -1.137610 + 0.247333I$ $b = 0.18143 + 1.88250I$	$-1.52748 - 1.01810I$	0
$u = 1.060790 + 0.318839I$ $a = 0.250423 - 0.244541I$ $b = -0.060557 - 0.528126I$	$-1.90791 - 1.30264I$	0
$u = 1.060790 - 0.318839I$ $a = 0.250423 + 0.244541I$ $b = -0.060557 + 0.528126I$	$-1.90791 + 1.30264I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.850090 + 0.712175I$		
$a = 1.32657 - 0.67283I$	$10.17410 - 7.33774I$	0
$b = 0.424380 - 0.107176I$		
$u = 0.850090 - 0.712175I$		
$a = 1.32657 + 0.67283I$	$10.17410 + 7.33774I$	0
$b = 0.424380 + 0.107176I$		
$u = -0.432157 + 0.775321I$		
$a = -1.20345 - 1.22917I$	$6.52645 - 5.80569I$	0
$b = -0.025196 - 0.180087I$		
$u = -0.432157 - 0.775321I$		
$a = -1.20345 + 1.22917I$	$6.52645 + 5.80569I$	0
$b = -0.025196 + 0.180087I$		
$u = -0.626201 + 0.625096I$		
$a = -0.838410 - 0.678997I$	$4.32590 - 5.42619I$	0
$b = 1.01490 - 1.77224I$		
$u = -0.626201 - 0.625096I$		
$a = -0.838410 + 0.678997I$	$4.32590 + 5.42619I$	0
$b = 1.01490 + 1.77224I$		
$u = -0.570543 + 0.959668I$		
$a = -0.800270 - 0.848486I$	$6.27187 - 2.95983I$	0
$b = 0.200774 - 0.268302I$		
$u = -0.570543 - 0.959668I$		
$a = -0.800270 + 0.848486I$	$6.27187 + 2.95983I$	0
$b = 0.200774 + 0.268302I$		
$u = -1.113800 + 0.077620I$		
$a = 0.446702 - 0.639826I$	$-0.77901 + 7.21951I$	0
$b = -0.32574 - 1.61736I$		
$u = -1.113800 - 0.077620I$		
$a = 0.446702 + 0.639826I$	$-0.77901 - 7.21951I$	0
$b = -0.32574 + 1.61736I$		

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.657255 + 0.909275I$ $a = 1.088970 - 0.712066I$ $b = -0.123532 - 0.187303I$	$4.36186 + 7.97183I$	0
$u = 0.657255 - 0.909275I$ $a = 1.088970 + 0.712066I$ $b = -0.123532 + 0.187303I$	$4.36186 - 7.97183I$	0
$u = -0.914797 + 0.660919I$ $a = 0.739234 + 0.676124I$ $b = -0.83643 + 1.47876I$	$1.29894 + 5.17544I$	0
$u = -0.914797 - 0.660919I$ $a = 0.739234 - 0.676124I$ $b = -0.83643 - 1.47876I$	$1.29894 - 5.17544I$	0
$u = -0.760740 + 0.416967I$ $a = 1.241350 - 0.136865I$ $b = 0.608290 - 1.115850I$	$1.246610 - 0.582741I$	0
$u = -0.760740 - 0.416967I$ $a = 1.241350 + 0.136865I$ $b = 0.608290 + 1.115850I$	$1.246610 + 0.582741I$	0
$u = 0.874822 + 0.719721I$ $a = 0.716781 - 1.155820I$ $b = 1.23055 - 1.78049I$	$10.10190 + 1.87017I$	0
$u = 0.874822 - 0.719721I$ $a = 0.716781 + 1.155820I$ $b = 1.23055 + 1.78049I$	$10.10190 - 1.87017I$	0
$u = 0.913453 + 0.670384I$ $a = -0.777747 + 1.015990I$ $b = -1.04270 + 2.14454I$	$5.08027 - 3.64584I$	0
$u = 0.913453 - 0.670384I$ $a = -0.777747 - 1.015990I$ $b = -1.04270 - 2.14454I$	$5.08027 + 3.64584I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.959519 + 0.620623I$ $a = -0.010563 - 0.987263I$ $b = -1.10142 - 1.57540I$	$1.99753 + 5.62196I$	0
$u = -0.959519 - 0.620623I$ $a = -0.010563 + 0.987263I$ $b = -1.10142 + 1.57540I$	$1.99753 - 5.62196I$	0
$u = -0.997511 + 0.567853I$ $a = -0.106511 + 0.731704I$ $b = 0.52936 + 1.36991I$	$0.03637 + 4.78899I$	0
$u = -0.997511 - 0.567853I$ $a = -0.106511 - 0.731704I$ $b = 0.52936 - 1.36991I$	$0.03637 - 4.78899I$	0
$u = -0.753439 + 0.893258I$ $a = -0.685128 - 0.757617I$ $b = 0.190907 - 0.138520I$	$8.96953 + 2.45341I$	0
$u = -0.753439 - 0.893258I$ $a = -0.685128 + 0.757617I$ $b = 0.190907 + 0.138520I$	$8.96953 - 2.45341I$	0
$u = 0.921136 + 0.724216I$ $a = -0.687688 - 0.470788I$ $b = 0.132010 - 0.733189I$	$4.54242 + 0.18184I$	0
$u = 0.921136 - 0.724216I$ $a = -0.687688 + 0.470788I$ $b = 0.132010 + 0.733189I$	$4.54242 - 0.18184I$	0
$u = -0.771547 + 0.297595I$ $a = 0.096710 + 1.336130I$ $b = 0.27809 + 1.99610I$	$-0.90498 + 4.15963I$	0
$u = -0.771547 - 0.297595I$ $a = 0.096710 - 1.336130I$ $b = 0.27809 - 1.99610I$	$-0.90498 - 4.15963I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.971620 + 0.669648I$ $a = 0.673407 - 0.924552I$ $b = 1.48002 - 2.39998I$	$8.98690 - 10.09910I$	0
$u = 0.971620 - 0.669648I$ $a = 0.673407 + 0.924552I$ $b = 1.48002 + 2.39998I$	$8.98690 + 10.09910I$	0
$u = -0.262704 + 0.773616I$ $a = 0.264280 - 0.778739I$ $b = -0.633860 + 0.099427I$	$3.78491 - 3.02009I$	0
$u = -0.262704 - 0.773616I$ $a = 0.264280 + 0.778739I$ $b = -0.633860 - 0.099427I$	$3.78491 + 3.02009I$	0
$u = -0.556761 + 1.045740I$ $a = 0.793384 + 0.769810I$ $b = -0.455631 - 0.074561I$	$9.95442 - 3.96437I$	0
$u = -0.556761 - 1.045740I$ $a = 0.793384 - 0.769810I$ $b = -0.455631 + 0.074561I$	$9.95442 + 3.96437I$	0
$u = 0.976610 + 0.673104I$ $a = 0.748537 + 0.817036I$ $b = 0.29436 + 1.49763I$	$-0.86937 - 7.38752I$	0
$u = 0.976610 - 0.673104I$ $a = 0.748537 - 0.817036I$ $b = 0.29436 - 1.49763I$	$-0.86937 + 7.38752I$	0
$u = 0.620597 + 1.012920I$ $a = -0.982464 + 0.744526I$ $b = 0.218852 - 0.018938I$	$9.7647 + 13.7165I$	0
$u = 0.620597 - 1.012920I$ $a = -0.982464 - 0.744526I$ $b = 0.218852 + 0.018938I$	$9.7647 - 13.7165I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.842678 + 0.838630I$		
$a = -1.243570 + 0.434373I$	$7.42495 + 0.18404I$	0
$b = -0.447992 + 0.181524I$		
$u = 0.842678 - 0.838630I$		
$a = -1.243570 - 0.434373I$	$7.42495 - 0.18404I$	0
$b = -0.447992 - 0.181524I$		
$u = 1.172770 + 0.203097I$		
$a = 0.818682 + 0.261927I$	$0.16800 + 3.52115I$	0
$b = 0.44461 + 1.88302I$		
$u = 1.172770 - 0.203097I$		
$a = 0.818682 - 0.261927I$	$0.16800 - 3.52115I$	0
$b = 0.44461 - 1.88302I$		
$u = -1.068460 + 0.528251I$		
$a = 0.495743 + 0.300993I$	$-0.49224 + 4.40585I$	0
$b = 1.58281 + 0.40351I$		
$u = -1.068460 - 0.528251I$		
$a = 0.495743 - 0.300993I$	$-0.49224 - 4.40585I$	0
$b = 1.58281 - 0.40351I$		
$u = -0.602031 + 1.038280I$		
$a = 0.679717 + 0.937809I$	$10.29690 - 2.97111I$	0
$b = 0.215654 + 0.315550I$		
$u = -0.602031 - 1.038280I$		
$a = 0.679717 - 0.937809I$	$10.29690 + 2.97111I$	0
$b = 0.215654 - 0.315550I$		
$u = -1.185720 + 0.192296I$		
$a = -0.781517 - 0.576114I$	$-3.19590 + 7.16430I$	0
$b = -1.27731 - 1.23026I$		
$u = -1.185720 - 0.192296I$		
$a = -0.781517 + 0.576114I$	$-3.19590 - 7.16430I$	0
$b = -1.27731 + 1.23026I$		

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.774891 + 0.186761I$ $a = 0.87427 + 1.21071I$ $b = 1.01288 + 1.25442I$	$0.96095 + 3.03835I$	0
$u = -0.774891 - 0.186761I$ $a = 0.87427 - 1.21071I$ $b = 1.01288 - 1.25442I$	$0.96095 - 3.03835I$	0
$u = -0.994423 + 0.677816I$ $a = 0.588656 + 1.117510I$ $b = 1.11154 + 2.02086I$	$2.60492 + 7.09908I$	0
$u = -0.994423 - 0.677816I$ $a = 0.588656 - 1.117510I$ $b = 1.11154 - 2.02086I$	$2.60492 - 7.09908I$	0
$u = -1.026250 + 0.630511I$ $a = -0.667338 - 0.661116I$ $b = 0.08517 - 2.29893I$	$3.08999 + 10.43030I$	0
$u = -1.026250 - 0.630511I$ $a = -0.667338 + 0.661116I$ $b = 0.08517 + 2.29893I$	$3.08999 - 10.43030I$	0
$u = 1.173520 + 0.273220I$ $a = 0.455407 - 0.360654I$ $b = 1.19123 - 1.48870I$	$-0.655419 - 0.092291I$	0
$u = 1.173520 - 0.273220I$ $a = 0.455407 + 0.360654I$ $b = 1.19123 + 1.48870I$	$-0.655419 + 0.092291I$	0
$u = 0.971208 + 0.743223I$ $a = 0.528657 - 0.589456I$ $b = 0.099570 - 1.279170I$	$-0.68184 - 2.97639I$	0
$u = 0.971208 - 0.743223I$ $a = 0.528657 + 0.589456I$ $b = 0.099570 + 1.279170I$	$-0.68184 + 2.97639I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.889665 + 0.850196I$ $a = -0.332897 - 0.961223I$ $b = -0.95870 - 1.65805I$	$8.81685 + 4.75994I$	0
$u = -0.889665 - 0.850196I$ $a = -0.332897 + 0.961223I$ $b = -0.95870 + 1.65805I$	$8.81685 - 4.75994I$	0
$u = 0.949153 + 0.798991I$ $a = -0.452701 + 1.187980I$ $b = -0.64662 + 1.92882I$	$7.08944 - 6.30071I$	0
$u = 0.949153 - 0.798991I$ $a = -0.452701 - 1.187980I$ $b = -0.64662 - 1.92882I$	$7.08944 + 6.30071I$	0
$u = -1.024250 + 0.702796I$ $a = 0.496948 - 0.481525I$ $b = -0.05463 - 1.50732I$	$4.90542 + 5.42536I$	0
$u = -1.024250 - 0.702796I$ $a = 0.496948 + 0.481525I$ $b = -0.05463 + 1.50732I$	$4.90542 - 5.42536I$	0
$u = -0.890819 + 0.867981I$ $a = -0.916706 - 0.391285I$ $b = -0.007710 + 0.270069I$	$8.83253 + 1.56785I$	0
$u = -0.890819 - 0.867981I$ $a = -0.916706 + 0.391285I$ $b = -0.007710 - 0.270069I$	$8.83253 - 1.56785I$	0
$u = 1.035090 + 0.701633I$ $a = -0.657342 - 0.766281I$ $b = -0.08280 - 1.68582I$	$4.2403 - 13.5881I$	0
$u = 1.035090 - 0.701633I$ $a = -0.657342 + 0.766281I$ $b = -0.08280 + 1.68582I$	$4.2403 + 13.5881I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.128870 + 0.540160I$ $a = -0.496476 + 0.060059I$ $b = -1.13466 + 0.89487I$	$1.24165 + 7.88041I$	0
$u = -1.128870 - 0.540160I$ $a = -0.496476 - 0.060059I$ $b = -1.13466 - 0.89487I$	$1.24165 - 7.88041I$	0
$u = 0.695099 + 1.046860I$ $a = -0.187252 + 0.517983I$ $b = 0.065553 + 1.209850I$	$5.02145 - 5.56410I$	0
$u = 0.695099 - 1.046860I$ $a = -0.187252 - 0.517983I$ $b = 0.065553 - 1.209850I$	$5.02145 + 5.56410I$	0
$u = 0.590454 + 0.448407I$ $a = 0.206533 + 0.075884I$ $b = -0.260318 - 0.895000I$	$-0.75181 - 1.75911I$	0
$u = 0.590454 - 0.448407I$ $a = 0.206533 - 0.075884I$ $b = -0.260318 + 0.895000I$	$-0.75181 + 1.75911I$	0
$u = 1.214290 + 0.331544I$ $a = 0.533415 - 0.214242I$ $b = 0.592306 - 0.489412I$	$-1.83287 - 1.28802I$	0
$u = 1.214290 - 0.331544I$ $a = 0.533415 + 0.214242I$ $b = 0.592306 + 0.489412I$	$-1.83287 + 1.28802I$	0
$u = 0.592865 + 0.435887I$ $a = 0.84521 - 1.19939I$ $b = -1.010780 - 0.969887I$	$1.69596 - 2.80767I$	0
$u = 0.592865 - 0.435887I$ $a = 0.84521 + 1.19939I$ $b = -1.010780 + 0.969887I$	$1.69596 + 2.80767I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.258530 + 0.129668I$ $a = 0.949986 + 0.211044I$ $b = 1.67338 + 0.32332I$	$1.03334 + 3.15335I$	0
$u = 1.258530 - 0.129668I$ $a = 0.949986 - 0.211044I$ $b = 1.67338 - 0.32332I$	$1.03334 - 3.15335I$	0
$u = -1.090750 + 0.644844I$ $a = -0.777817 - 0.993349I$ $b = -1.35180 - 1.98578I$	$4.66317 + 11.17020I$	0
$u = -1.090750 - 0.644844I$ $a = -0.777817 + 0.993349I$ $b = -1.35180 + 1.98578I$	$4.66317 - 11.17020I$	0
$u = -0.501854 + 0.494679I$ $a = 0.850357 + 0.182406I$ $b = 0.333900 - 0.518337I$	$1.344830 - 0.367303I$	0
$u = -0.501854 - 0.494679I$ $a = 0.850357 - 0.182406I$ $b = 0.333900 + 0.518337I$	$1.344830 + 0.367303I$	0
$u = -1.012260 + 0.813521I$ $a = -0.557837 - 0.579479I$ $b = -0.98432 - 1.39711I$	$8.19560 + 3.84853I$	0
$u = -1.012260 - 0.813521I$ $a = -0.557837 + 0.579479I$ $b = -0.98432 + 1.39711I$	$8.19560 - 3.84853I$	0
$u = 1.066020 + 0.748565I$ $a = 0.595459 - 1.003130I$ $b = 0.98924 - 2.15417I$	$3.0936 - 14.0941I$	0
$u = 1.066020 - 0.748565I$ $a = 0.595459 + 1.003130I$ $b = 0.98924 + 2.15417I$	$3.0936 + 14.0941I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.108540 + 0.725067I$ $a = -0.642614 - 0.802010I$ $b = -0.99655 - 1.87804I$	$4.60037 + 9.10371I$	0
$u = -1.108540 - 0.725067I$ $a = -0.642614 + 0.802010I$ $b = -0.99655 + 1.87804I$	$4.60037 - 9.10371I$	0
$u = 0.200810 + 1.311100I$ $a = 0.001357 + 0.844155I$ $b = -0.206213 + 0.177742I$	$7.11502 - 6.59112I$	0
$u = 0.200810 - 1.311100I$ $a = 0.001357 - 0.844155I$ $b = -0.206213 - 0.177742I$	$7.11502 + 6.59112I$	0
$u = 1.122210 + 0.767503I$ $a = -0.574907 + 0.953747I$ $b = -1.18822 + 2.15176I$	$8.1750 - 20.1811I$	0
$u = 1.122210 - 0.767503I$ $a = -0.574907 - 0.953747I$ $b = -1.18822 - 2.15176I$	$8.1750 + 20.1811I$	0
$u = -1.130570 + 0.780366I$ $a = 0.736243 + 0.766101I$ $b = 1.08578 + 1.30249I$	$8.64198 + 9.53082I$	0
$u = -1.130570 - 0.780366I$ $a = 0.736243 - 0.766101I$ $b = 1.08578 - 1.30249I$	$8.64198 - 9.53082I$	0
$u = -1.354970 + 0.238706I$ $a = 0.723068 + 0.454325I$ $b = 1.37125 + 1.17547I$	$1.23384 + 11.69350I$	0
$u = -1.354970 - 0.238706I$ $a = 0.723068 - 0.454325I$ $b = 1.37125 - 1.17547I$	$1.23384 - 11.69350I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.154050 + 0.758715I$ $a = 0.530945 + 0.803697I$ $b = 1.26385 + 2.11724I$	$8.08457 + 10.46880I$	0
$u = -1.154050 - 0.758715I$ $a = 0.530945 - 0.803697I$ $b = 1.26385 - 2.11724I$	$8.08457 - 10.46880I$	0
$u = 1.41426 + 0.24865I$ $a = -0.593767 + 0.264467I$ $b = -0.602795 + 1.179350I$	$1.57961 - 0.90971I$	0
$u = 1.41426 - 0.24865I$ $a = -0.593767 - 0.264467I$ $b = -0.602795 - 1.179350I$	$1.57961 + 0.90971I$	0
$u = -0.510501$ $a = 2.73379$ $b = 0.514162$	2.62224	-10.7210
$u = -0.474905 + 0.105090I$ $a = -3.10488 - 0.39152I$ $b = -0.006293 - 0.407151I$	$7.06383 - 5.40730I$	$-2.10146 + 3.84042I$
$u = -0.474905 - 0.105090I$ $a = -3.10488 + 0.39152I$ $b = -0.006293 + 0.407151I$	$7.06383 + 5.40730I$	$-2.10146 - 3.84042I$
$u = 0.424562 + 0.075928I$ $a = -1.03913 - 1.15125I$ $b = -1.156600 + 0.188778I$	$-1.03654 + 1.97369I$	$-3.23403 - 3.94535I$
$u = 0.424562 - 0.075928I$ $a = -1.03913 + 1.15125I$ $b = -1.156600 - 0.188778I$	$-1.03654 - 1.97369I$	$-3.23403 + 3.94535I$
$u = 0.126420 + 0.370317I$ $a = -0.46542 - 1.59180I$ $b = 1.84958 + 0.05960I$	$3.79450 - 5.96104I$	$5.56144 + 10.98017I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.126420 - 0.370317I$ $a = -0.46542 + 1.59180I$ $b = 1.84958 - 0.05960I$	$3.79450 + 5.96104I$	$5.56144 - 10.98017I$
$u = -0.007858 + 0.366859I$ $a = 1.77418 + 0.79931I$ $b = 0.197596 - 0.346161I$	$0.77391 - 1.80327I$	$3.26429 + 3.38985I$
$u = -0.007858 - 0.366859I$ $a = 1.77418 - 0.79931I$ $b = 0.197596 + 0.346161I$	$0.77391 + 1.80327I$	$3.26429 - 3.38985I$

II.

$$I_2^u = \langle -1.52 \times 10^8 u^{34} - 6.51 \times 10^8 u^{33} + \dots + 1.55 \times 10^6 b + 1.49 \times 10^8, -3.21 \times 10^7 u^{34} - 1.04 \times 10^8 u^{33} + \dots + 1.55 \times 10^6 a - 1.21 \times 10^7, u^{35} + 5u^{34} + \dots - 4u - 1 \rangle$$

(i) Arc colorings

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

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

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

$$a_{10} = \begin{pmatrix} 20.6790u^{34} + 66.9766u^{33} + \dots - 9.40460u + 7.78043 \\ 97.7843u^{34} + 419.381u^{33} + \dots - 331.791u - 96.0440 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 50.9369u^{34} + 186.635u^{33} + \dots - 86.4751u - 16.3830 \\ 68.3050u^{34} + 285.435u^{33} + \dots - 203.901u - 63.1350 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -41.0631u^{34} - 176.365u^{33} + \dots + 139.525u + 45.6170 \\ -4.60138u^{34} - 22.1666u^{33} + \dots + 24.3394u + 15.4841 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 78.9053u^{34} + 291.003u^{33} + \dots - 143.193u - 30.7292 \\ 87.6712u^{34} + 351.410u^{33} + \dots - 230.910u - 65.8919 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 39.8584u^{34} + 165.801u^{33} + \dots - 103.368u - 24.9750 \\ 15.1794u^{34} + 79.8247u^{33} + \dots - 67.9637u - 19.7554 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 32.3951u^{34} + 80.8831u^{33} + \dots + 45.9770u + 40.9022 \\ 109.500u^{34} + 433.288u^{33} + \dots - 276.409u - 62.9223 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -24.4144u^{34} - 105.711u^{33} + \dots + 81.8965u + 25.0201 \\ 16.0473u^{34} + 68.4873u^{33} + \dots - 58.2890u - 22.1127 \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes = $\frac{278558292}{1552697}u^{34} + \frac{1156360262}{1552697}u^{33} + \dots - \frac{23488223}{50087}u - \frac{208700972}{1552697}$

(iv) u -Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{35} - 15u^{34} + \dots + 12u - 1$
c_2	$u^{35} + 5u^{34} + \dots - 4u - 1$
c_3	$u^{35} - 6u^{33} + \dots + 6u^2 - 1$
c_4	$u^{35} - 4u^{33} + \dots + 5u^3 - 1$
c_5	$u^{35} - 5u^{34} + \dots - 4u + 1$
c_6	$u^{35} + 3u^{34} + \dots - u + 1$
c_7	$u^{35} - 4u^{34} + \dots - 2u + 1$
c_8	$u^{35} - 4u^{34} + \dots - 16u + 1$
c_9	$u^{35} - 2u^{33} + \dots - 17u^2 - 1$
c_{10}	$u^{35} - 3u^{34} + \dots - u - 1$
c_{11}	$u^{35} + 4u^{34} + \dots - 16u - 1$
c_{12}	$u^{35} - 4u^{33} + \dots + 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{35} + 9y^{34} + \dots + 12y - 1$
c_2, c_5	$y^{35} - 15y^{34} + \dots + 12y - 1$
c_3	$y^{35} - 12y^{34} + \dots + 12y - 1$
c_4	$y^{35} - 8y^{34} + \dots - 12y^2 - 1$
c_6, c_{10}	$y^{35} - 19y^{34} + \dots + 27y - 1$
c_7	$y^{35} + 20y^{33} + \dots - 2y - 1$
c_8, c_{11}	$y^{35} + 28y^{34} + \dots + 2y - 1$
c_9	$y^{35} - 4y^{34} + \dots - 34y - 1$
c_{12}	$y^{35} - 8y^{34} + \dots - 12y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.952324 + 0.369350I$		
$a = 0.654714 + 0.663740I$	$-1.87460 + 0.57113I$	$-5.17275 - 1.58863I$
$b = 0.801199 + 0.888255I$		
$u = 0.952324 - 0.369350I$		
$a = 0.654714 - 0.663740I$	$-1.87460 - 0.57113I$	$-5.17275 + 1.58863I$
$b = 0.801199 - 0.888255I$		
$u = -0.763074 + 0.572132I$		
$a = -1.165640 + 0.560134I$	$0.005916 - 1.049110I$	$2.95322 + 2.05623I$
$b = -0.60988 + 1.30359I$		
$u = -0.763074 - 0.572132I$		
$a = -1.165640 - 0.560134I$	$0.005916 + 1.049110I$	$2.95322 - 2.05623I$
$b = -0.60988 - 1.30359I$		
$u = 0.710870 + 0.631310I$		
$a = 0.640178 - 0.901706I$	$0.46747 - 3.07344I$	$2.02904 + 5.41703I$
$b = -0.561482 - 1.244580I$		
$u = 0.710870 - 0.631310I$		
$a = 0.640178 + 0.901706I$	$0.46747 + 3.07344I$	$2.02904 - 5.41703I$
$b = -0.561482 + 1.244580I$		
$u = -0.940591 + 0.571888I$		
$a = 0.190979 - 1.133390I$	$-0.57376 + 5.61276I$	$-0.20505 - 10.95929I$
$b = -0.41658 - 1.68997I$		
$u = -0.940591 - 0.571888I$		
$a = 0.190979 + 1.133390I$	$-0.57376 - 5.61276I$	$-0.20505 + 10.95929I$
$b = -0.41658 + 1.68997I$		
$u = -1.004130 + 0.512194I$		
$a = -0.300402 - 0.478538I$	$-1.01057 + 4.86471I$	$-2.41225 - 8.49143I$
$b = -1.53489 - 0.28906I$		
$u = -1.004130 - 0.512194I$		
$a = -0.300402 + 0.478538I$	$-1.01057 - 4.86471I$	$-2.41225 + 8.49143I$
$b = -1.53489 + 0.28906I$		

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.715012 + 0.494155I$ $a = -0.985754 + 0.042073I$ $b = -0.59448 + 1.61405I$	$0.006296 - 0.742006I$	$0.280768 + 0.453523I$
$u = -0.715012 - 0.494155I$ $a = -0.985754 - 0.042073I$ $b = -0.59448 - 1.61405I$	$0.006296 + 0.742006I$	$0.280768 - 0.453523I$
$u = 0.556860 + 1.046160I$ $a = -0.228651 + 0.632619I$ $b = 0.293159 + 1.285910I$	$5.40416 - 5.73662I$	$14.5171 + 10.1664I$
$u = 0.556860 - 1.046160I$ $a = -0.228651 - 0.632619I$ $b = 0.293159 - 1.285910I$	$5.40416 + 5.73662I$	$14.5171 - 10.1664I$
$u = -1.100590 + 0.460700I$ $a = 0.387508 + 0.177224I$ $b = 0.672862 - 1.006260I$	$1.49510 + 8.67317I$	$4.48341 - 10.04345I$
$u = -1.100590 - 0.460700I$ $a = 0.387508 - 0.177224I$ $b = 0.672862 + 1.006260I$	$1.49510 - 8.67317I$	$4.48341 + 10.04345I$
$u = -0.833944 + 0.861183I$ $a = -1.114360 - 0.451541I$ $b = -0.295447 - 0.177981I$	$7.18663 - 0.09516I$	$-2.23336 - 2.40298I$
$u = -0.833944 - 0.861183I$ $a = -1.114360 + 0.451541I$ $b = -0.295447 + 0.177981I$	$7.18663 + 0.09516I$	$-2.23336 + 2.40298I$
$u = 1.130950 + 0.407668I$ $a = 0.597695 - 0.260622I$ $b = 1.121610 - 0.802185I$	$-1.37185 - 1.60234I$	$3.69800 + 4.97364I$
$u = 1.130950 - 0.407668I$ $a = 0.597695 + 0.260622I$ $b = 1.121610 + 0.802185I$	$-1.37185 + 1.60234I$	$3.69800 - 4.97364I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.704634 + 0.351829I$ $a = 0.14118 - 1.42247I$ $b = -0.14689 - 1.73746I$	$-1.00331 - 3.62857I$	$-0.299753 + 0.113090I$
$u = 0.704634 - 0.351829I$ $a = 0.14118 + 1.42247I$ $b = -0.14689 + 1.73746I$	$-1.00331 + 3.62857I$	$-0.299753 - 0.113090I$
$u = -0.962687 + 0.818475I$ $a = -0.391871 - 1.059390I$ $b = -0.60653 - 1.82164I$	$6.78931 + 6.33721I$	$0. - 9.64738I$
$u = -0.962687 - 0.818475I$ $a = -0.391871 + 1.059390I$ $b = -0.60653 + 1.82164I$	$6.78931 - 6.33721I$	$0. + 9.64738I$
$u = -0.400764 + 0.616466I$ $a = 1.26826 + 1.46524I$ $b = -0.443571 + 0.343597I$	$7.77251 - 5.32661I$	$10.87504 + 3.22243I$
$u = -0.400764 - 0.616466I$ $a = 1.26826 - 1.46524I$ $b = -0.443571 - 0.343597I$	$7.77251 + 5.32661I$	$10.87504 - 3.22243I$
$u = 0.132863 + 0.700344I$ $a = -0.22196 + 1.85127I$ $b = -0.442969 + 0.087579I$	$7.78742 - 5.47056I$	$11.30668 + 5.00480I$
$u = 0.132863 - 0.700344I$ $a = -0.22196 - 1.85127I$ $b = -0.442969 - 0.087579I$	$7.78742 + 5.47056I$	$11.30668 - 5.00480I$
$u = -1.112870 + 0.647724I$ $a = 0.754171 + 0.807475I$ $b = 1.21984 + 2.00058I$	$5.72869 + 10.57970I$	$7.53102 - 8.63101I$
$u = -1.112870 - 0.647724I$ $a = 0.754171 - 0.807475I$ $b = 1.21984 - 2.00058I$	$5.72869 - 10.57970I$	$7.53102 + 8.63101I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.629011 + 0.299001I$ $a = 0.778076 + 0.100265I$ $b = 2.28291 - 1.38325I$	$3.38154 - 5.29286I$	$-1.11480 + 2.37174I$
$u = -0.629011 - 0.299001I$ $a = 0.778076 - 0.100265I$ $b = 2.28291 + 1.38325I$	$3.38154 + 5.29286I$	$-1.11480 - 2.37174I$
$u = 0.451080$ $a = 3.09738$ $b = 0.855377$	2.84524	26.9720
$u = 1.54864 + 0.21635I$ $a = -0.552813 + 0.192199I$ $b = -0.666552 + 0.765646I$	$1.15471 - 0.87139I$	0
$u = 1.54864 - 0.21635I$ $a = -0.552813 - 0.192199I$ $b = -0.666552 - 0.765646I$	$1.15471 + 0.87139I$	0

$$\text{III. } I_3^u = \langle b - 2a - 1, a^2 + a + 1, u + 1 \rangle$$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ 2a + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a + 1 \\ a + 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} a - 1 \\ 2a \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} a + 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a + 1 \\ 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1 \\ a \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} a \\ a \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = $-4a - 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_8, c_{11}	$(u + 1)^2$
c_2, c_5	$(u - 1)^2$
c_3	$u^2 - u + 1$
c_4, c_6, c_7 c_9, c_{10}, c_{12}	$u^2 + u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5 c_8, c_{11}	$(y - 1)^2$
c_3, c_4, c_6 c_7, c_9, c_{10} c_{12}	$y^2 + y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$		
$a = -0.500000 + 0.866025I$	$-4.93480 + 2.02988I$	$-6.00000 - 3.46410I$
$b = 1.73205I$		
$u = -1.00000$		
$a = -0.500000 - 0.866025I$	$-4.93480 - 2.02988I$	$-6.00000 + 3.46410I$
$b = -1.73205I$		

$$\text{IV. } I_4^u = \langle -a^3b - a^3 + b^2 - 2ba + 3a^2 + a - 2, a^4 - a^2 + 1, u - 1 \rangle$$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ b \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a^2 \\ ba + 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -a^3 + a \\ -a^2b + b - a \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} a^2 \\ ba - a^2 + 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -a^3b + a^2 - 1 \\ -ba + 2a^2 + a - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -b + 2a \\ a \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -a^3b - a^3 + 2a^2 + a - 2 \\ -a^2b + a^2 + b - a - 1 \end{pmatrix}$$

(ii) Obstruction class = 1

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u - 1)^8$
c_3	$u^8 - 2u^7 - u^6 + 4u^5 - 6u^3 + 3u^2 + 4u + 1$
c_4	$u^8 + 3u^6 + 2u^5 + 4u^4 + 7u^2 - 2u + 1$
c_5	$(u + 1)^8$
c_6, c_{10}	$(u^4 - u^2 + 1)^2$
c_7	$(u^2 + u + 1)^4$
c_8, c_{11}	$(u^2 + 1)^4$
c_9	$u^8 - 2u^5 + u^4 - 6u^3 + 4u^2 + 2u + 1$
c_{12}	$u^8 - 4u^7 + 8u^6 - 10u^5 + 9u^4 - 6u^3 + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$(y - 1)^8$
c_3	$y^8 - 6y^7 + 17y^6 - 34y^5 + 60y^4 - 70y^3 + 57y^2 - 10y + 1$
c_4	$y^8 + 6y^7 + 17y^6 + 34y^5 + 60y^4 + 70y^3 + 57y^2 + 10y + 1$
c_6, c_{10}	$(y^2 - y + 1)^4$
c_7	$(y^2 + y + 1)^4$
c_8, c_{11}	$(y + 1)^8$
c_9	$y^8 + 2y^6 + 4y^5 - 21y^4 - 20y^3 + 42y^2 + 4y + 1$
c_{12}	$y^8 + 2y^6 - 4y^5 - 21y^4 + 20y^3 + 42y^2 - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0.866025 + 0.500000I$ $b = 1.090230 + 0.183732I$	$2.02988I$	$2.00000 - 3.46410I$
$u = 1.00000$ $a = 0.866025 + 0.500000I$ $b = 0.64182 + 1.81627I$	$2.02988I$	$2.00000 - 3.46410I$
$u = 1.00000$ $a = 0.866025 - 0.500000I$ $b = 1.090230 - 0.183732I$	$-2.02988I$	$2.00000 + 3.46410I$
$u = 1.00000$ $a = 0.866025 - 0.500000I$ $b = 0.64182 - 1.81627I$	$-2.02988I$	$2.00000 + 3.46410I$
$u = 1.00000$ $a = -0.866025 + 0.500000I$ $b = 0.33397 + 1.56918I$	$-2.02988I$	$2.00000 + 3.46410I$
$u = 1.00000$ $a = -0.866025 + 0.500000I$ $b = -2.06602 + 0.43082I$	$-2.02988I$	$2.00000 + 3.46410I$
$u = 1.00000$ $a = -0.866025 - 0.500000I$ $b = 0.33397 - 1.56918I$	$2.02988I$	$2.00000 - 3.46410I$
$u = 1.00000$ $a = -0.866025 - 0.500000I$ $b = -2.06602 - 0.43082I$	$2.02988I$	$2.00000 - 3.46410I$

$$\mathbf{V. } I_5^u = \langle -u^8 + 2u^7 - 2u^4 + b + u, -u^8 + 2u^7 + \cdots + a - 1, u^9 - 2u^8 - u^7 + 2u^6 + 3u^5 - 2u^4 - 2u^3 + u + 1 \rangle$$

(i) Arc colorings

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

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

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

$$a_{10} = \begin{pmatrix} u^8 - 2u^7 - u^6 + 2u^5 + 3u^4 - 2u^3 - 2u^2 + 1 \\ u^8 - 2u^7 + 2u^4 - u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^8 + 2u^7 + u^6 - 2u^5 - 3u^4 + 2u^3 + 2u^2 - 1 \\ -u^8 + 2u^7 - 2u^4 + 2u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} u^5 - 2u^4 + u^2 + u - 1 \\ u^7 - 2u^6 + u^5 - u^2 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^4 - u^3 - u^2 + 1 \\ u^6 - 2u^5 + u^3 + u^2 - u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = 6

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^9 + 6u^8 + 15u^7 + 22u^6 + 23u^5 + 14u^4 + 6u^3 + u + 1$
c_2, c_5, c_{12}	$u^9 + 2u^8 - u^7 - 2u^6 + 3u^5 + 2u^4 - 2u^3 + u - 1$
c_3, c_8, c_{11}	$u^9 + u^7 - u^5 + u - 1$
c_4	$u^9 - 6u^8 + 15u^7 - 22u^6 + 23u^5 - 14u^4 + 6u^3 + u - 1$
c_6, c_{10}	$(u - 1)^9$
c_7	$u^9 - u^7 - 3u^6 + 7u^5 - 10u^4 + 4u^3 - 3u^2 + 3u - 1$
c_9	$u^9 + 3u^7 - 4u^6 + u^5 - 6u^4 - 2u^3 + 4u^2 + 5u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^9 - 6y^8 + 7y^7 + 50y^6 + 95y^5 + 98y^4 + 38y^3 - 16y^2 + y - 1$
c_2, c_5, c_{12}	$y^9 - 6y^8 + 15y^7 - 22y^6 + 23y^5 - 14y^4 + 6y^3 + y - 1$
c_3, c_8, c_{11}	$y^9 + 2y^8 - y^7 - 2y^6 + 3y^5 + 2y^4 - 2y^3 + y - 1$
c_6, c_{10}	$(y - 1)^9$
c_7	$y^9 - 2y^8 + 15y^7 - 15y^6 - 13y^5 - 68y^4 - 8y^3 - 5y^2 + 3y - 1$
c_9	$y^9 + 6y^8 + 11y^7 - 14y^6 - 49y^5 + 22y^4 + 70y^3 - 24y^2 + 17y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.804809 + 0.675390I$ $a = 0.729080 + 0.611838I$ $b = 0.14426 + 2.22883I$	1.64493	6.00000
$u = -0.804809 - 0.675390I$ $a = 0.729080 - 0.611838I$ $b = 0.14426 - 2.22883I$	1.64493	6.00000
$u = 0.938584 + 0.497255I$ $a = -0.831928 + 0.440750I$ $b = -0.11581 + 1.56743I$	1.64493	6.00000
$u = 0.938584 - 0.497255I$ $a = -0.831928 - 0.440750I$ $b = -0.11581 - 1.56743I$	1.64493	6.00000
$u = -0.741936$ $a = 1.34783$ $b = 1.68729$	1.64493	6.00000
$u = -0.269653 + 0.627398I$ $a = 0.57823 + 1.34536I$ $b = 0.158673 - 0.330377I$	1.64493	6.00000
$u = -0.269653 - 0.627398I$ $a = 0.57823 - 1.34536I$ $b = 0.158673 + 0.330377I$	1.64493	6.00000
$u = 1.50685 + 0.22394I$ $a = -0.649297 + 0.096495I$ $b = -1.030760 - 0.107997I$	1.64493	6.00000
$u = 1.50685 - 0.22394I$ $a = -0.649297 - 0.096495I$ $b = -1.030760 + 0.107997I$	1.64493	6.00000

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^8)(u+1)^2(u^9+6u^8+\dots+u+1)$ $\cdot (u^{35}-15u^{34}+\dots+12u-1)$ $\cdot (u^{153}+56u^{152}+\dots+5203262u+162409)$
c_2	$(u-1)^{10}(u^9+2u^8-u^7-2u^6+3u^5+2u^4-2u^3+u-1)$ $\cdot (u^{35}+5u^{34}+\dots-4u-1)(u^{153}+4u^{152}+\dots-1308u-403)$
c_3	$(u^2-u+1)(u^8-2u^7-u^6+4u^5-6u^3+3u^2+4u+1)$ $\cdot (u^9+u^7-u^5+u-1)(u^{35}-6u^{33}+\dots+6u^2-1)$ $\cdot (u^{153}+4u^{152}+\dots+3298135u+149921)$
c_4	$(u^2+u+1)(u^8+3u^6+2u^5+4u^4+7u^2-2u+1)$ $\cdot (u^9-6u^8+15u^7-22u^6+23u^5-14u^4+6u^3+u-1)$ $\cdot (u^{35}-4u^{33}+\dots+5u^3-1)(u^{153}+2u^{152}+\dots-590459u+127561)$
c_5	$(u-1)^2(u+1)^8(u^9+2u^8-u^7-2u^6+3u^5+2u^4-2u^3+u-1)$ $\cdot (u^{35}-5u^{34}+\dots-4u+1)(u^{153}+4u^{152}+\dots-1308u-403)$
c_6	$((u-1)^9)(u^2+u+1)(u^4-u^2+1)^2(u^{35}+3u^{34}+\dots-u+1)$ $\cdot (u^{153}+4u^{152}+\dots-32672u-1744)$
c_7	$(u^2+u+1)^5(u^9-u^7-3u^6+7u^5-10u^4+4u^3-3u^2+3u-1)$ $\cdot (u^{35}-4u^{34}+\dots-2u+1)(u^{153}-4u^{152}+\dots-54959u-3812)$
c_8	$((u+1)^2)(u^2+1)^4(u^9+u^7+\dots+u-1)(u^{35}-4u^{34}+\dots-16u+1)$ $\cdot (u^{153}-11u^{152}+\dots+444u-9)$
c_9	$(u^2+u+1)(u^8-2u^5+u^4-6u^3+4u^2+2u+1)$ $\cdot (u^9+3u^7-4u^6+u^5-6u^4-2u^3+4u^2+5u+1)$ $\cdot (u^{35}-2u^{33}+\dots-17u^2-1)$ $\cdot (u^{153}-36u^{151}+\dots-415921821u-28550563)$
c_{10}	$((u-1)^9)(u^2+u+1)(u^4-u^2+1)^2(u^{35}-3u^{34}+\dots-u-1)$ $\cdot (u^{153}+4u^{152}+\dots-32672u-1744)$
c_{11}	$((u+1)^2)(u^2+1)^4(u^9+u^7+\dots+u-1)(u^{35}+4u^{34}+\dots-16u-1)$ $\cdot (u^{153}-11u^{152}+\dots+444u-9)$
c_{12}	$(u^2+u+1)(u^8-4u^7+8u^6-10u^5+9u^4-6u^3+2u+1)$ $\cdot (u^9+2u^8-u^7-2u^6+3u^5+2u^4-2u^3+u-1)$ $\cdot (u^{35}-4u^{33}+\dots+4u+1)(u^{153}+12u^{152}+\dots-183u+11)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^{10})(y^9 - 6y^8 + \dots + y - 1)$ $\cdot (y^{35} + 9y^{34} + \dots + 12y - 1)$ $\cdot (y^{153} + 88y^{152} + \dots + 4445192262174y - 26376683281)$
c_2, c_5	$(y-1)^{10}(y^9 - 6y^8 + 15y^7 - 22y^6 + 23y^5 - 14y^4 + 6y^3 + y - 1)$ $\cdot (y^{35} - 15y^{34} + \dots + 12y - 1)$ $\cdot (y^{153} - 56y^{152} + \dots + 5203262y - 162409)$
c_3	$(y^2 + y + 1)(y^8 - 6y^7 + \dots - 10y + 1)$ $\cdot (y^9 + 2y^8 - y^7 - 2y^6 + 3y^5 + 2y^4 - 2y^3 + y - 1)$ $\cdot (y^{35} - 12y^{34} + \dots + 12y - 1)$ $\cdot (y^{153} - 58y^{152} + \dots + 6128533920791y - 22476306241)$
c_4	$(y^2 + y + 1)(y^8 + 6y^7 + \dots + 10y + 1)$ $\cdot (y^9 - 6y^8 + 7y^7 + 50y^6 + 95y^5 + 98y^4 + 38y^3 - 16y^2 + y - 1)$ $\cdot (y^{35} - 8y^{34} + \dots - 12y^2 - 1)$ $\cdot (y^{153} - 22y^{152} + \dots + 398065340131y - 16271808721)$
c_6, c_{10}	$((y-1)^9)(y^2 - y + 1)^4(y^2 + y + 1)(y^{35} - 19y^{34} + \dots + 27y - 1)$ $\cdot (y^{153} - 96y^{152} + \dots + 45684864y - 3041536)$
c_7	$(y^2 + y + 1)^5$ $\cdot (y^9 - 2y^8 + 15y^7 - 15y^6 - 13y^5 - 68y^4 - 8y^3 - 5y^2 + 3y - 1)$ $\cdot (y^{35} + 20y^{33} + \dots - 2y - 1)$ $\cdot (y^{153} - 4y^{152} + \dots + 642535585y - 14531344)$
c_8, c_{11}	$(y-1)^2(y+1)^8(y^9 + 2y^8 - y^7 - 2y^6 + 3y^5 + 2y^4 - 2y^3 + y - 1)$ $\cdot (y^{35} + 28y^{34} + \dots + 2y - 1)(y^{153} + 127y^{152} + \dots + 10368y - 81)$
c_9	$(y^2 + y + 1)(y^8 + 2y^6 + 4y^5 - 21y^4 - 20y^3 + 42y^2 + 4y + 1)$ $\cdot (y^9 + 6y^8 + 11y^7 - 14y^6 - 49y^5 + 22y^4 + 70y^3 - 24y^2 + 17y - 1)$ $\cdot (y^{35} - 4y^{34} + \dots - 34y - 1)$ $\cdot (y^{153} - 72y^{152} + \dots + 144574949507127535y - 815134647616969)$
c_{12}	$(y^2 + y + 1)(y^8 + 2y^6 - 4y^5 - 21y^4 + 20y^3 + 42y^2 - 4y + 1)$ $\cdot (y^9 - 6y^8 + 15y^7 - 22y^6 + 23y^5 - 14y^4 + 6y^3 + y - 1)$ $\cdot (y^{35} - 8y^{34} + \dots - 12y - 1)(y^{153} - 16y^{152} + \dots + 16637y - 121)$