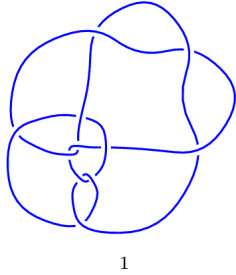
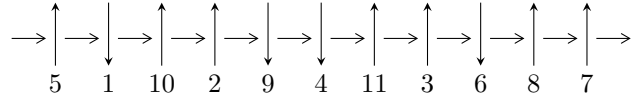


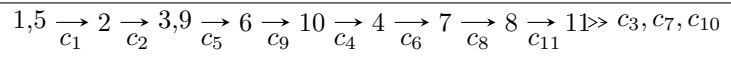
11a<sub>67</sub> (K11a<sub>67</sub>)



**Arc Sequences**



**Solving Sequence**



**Representation Ideals**

$$I = \bigcap_{i=1}^3 I_i^u$$

$$I_1^u = \langle u^{66} - 3u^{65} + \dots - 41u + 9, 9.81051 \times 10^{60}u^{65} - 5.47738 \times 10^{62}u^{64} + \dots + 1.47186 \times 10^{63}b - 2.87133 \times 10^6 - 1.19331 \times 10^{63}u^{65} + 3.50804 \times 10^{63}u^{64} + \dots + 4.41558 \times 10^{63}a + 4.81025 \times 10^{63} \rangle$$

$$I_2^u = \langle u^2 + u + 1, a - 1, 3b - 4u - 2 \rangle$$

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

There are 3 irreducible components with 70 representations.

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

$$\langle u^{66} - 3u^{65} + \dots - 41u + 9, \mathbf{I. I_1^u} = 9.81 \times 10^{60}u^{65} - 5.48 \times 10^{62}u^{64} + \dots + 1.47 \times 10^{63}b - 2.87 \times 10^{63}, -1.19 \times 10^{63}u^{65} + 3.51 \times 10^{63}u^{64} + \dots + 4.42 \times 10^{63}a + 4.81 \times 10^{63} \rangle$$

(i) Arc colorings

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

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 0.270250u^{65} - 0.794469u^{64} + \dots + 4.90086u - 1.08938 \\ -0.00666538u^{65} + 0.372140u^{64} + \dots - 6.63626u + 1.95081 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.748834u^{65} - 1.21030u^{64} + \dots - 3.69300u + 1.08551 \\ -1.24191u^{65} + 3.40219u^{64} + \dots - 26.3774u + 5.04613 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.326052u^{65} - 0.806467u^{64} + \dots - 1.31458u + 1.11497 \\ -0.171690u^{65} + 0.787810u^{64} + \dots - 14.4831u + 2.93447 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 0.556836u^{65} - 1.04706u^{64} + \dots - 1.41116u + 0.0253487 \\ -0.670953u^{65} + 1.85058u^{64} + \dots - 13.4642u + 2.39147 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.673009u^{65} - 1.57681u^{64} + \dots + 6.69251u - 1.59627 \\ -0.338424u^{65} + 1.14946u^{64} + \dots - 14.5248u + 3.82271 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.282928u^{65} + 0.623979u^{64} + \dots + 1.73222u - 0.615946 \\ 0.326521u^{65} - 0.860783u^{64} + \dots + 9.33068u - 2.10352 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.282928u^{65} + 0.623979u^{64} + \dots + 1.73222u - 0.615946 \\ 0.326521u^{65} - 0.860783u^{64} + \dots + 9.33068u - 2.10352 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = unknown

(iv) Complex Volumes and Cusp Shapes

Solution to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.935300 - 0.273219I$		
$a = -0.572823 + 0.487015I$	$-2.35847 + 1.56855I$	$4.39447 - 3.89698I$
$b = 0.057009 - 0.304073I$		
$u = -0.935300 + 0.273219I$		
$a = -0.572823 - 0.487015I$	$-2.35847 - 1.56855I$	$4.39447 + 3.89698I$
$b = 0.057009 + 0.304073I$		
$u = -0.925761 - 0.963630I$		
$a = -0.292558 + 0.630615I$	$-3.68434 + 4.73747I$	$1.30727 - 7.90880I$
$b = 0.826100 - 0.753612I$		
$u = -0.925761 + 0.963630I$		
$a = -0.292558 - 0.630615I$	$-3.68434 - 4.73747I$	$1.30727 + 7.90880I$
$b = 0.826100 + 0.753612I$		
$u = -0.850565 - 0.604928I$		
$a = -0.506519 - 0.001870I$	$-2.64330 + 1.72779I$	$3.37557 - 1.36335I$
$b = -0.401943 + 0.273456I$		
$u = -0.850565 + 0.604928I$		
$a = -0.506519 + 0.001870I$	$-2.64330 - 1.72779I$	$3.37557 + 1.36335I$
$b = -0.401943 - 0.273456I$		
$u = -0.811477 - 0.733493I$		
$a = 0.399576 - 0.654533I$	$0.71398 + 2.89026I$	$7.98157 - 7.76196I$
$b = -0.756543 + 0.252393I$		
$u = -0.811477 + 0.733493I$		
$a = 0.399576 + 0.654533I$	$0.71398 - 2.89026I$	$7.98157 + 7.76196I$
$b = -0.756543 - 0.252393I$		
$u = -0.633036 - 0.187323I$		
$a = 0.909858 + 0.122210I$	$1.191740 + 0.072864I$	$10.27225 + 0.64255I$
$b = 0.308390 - 0.185739I$		
$u = -0.633036 + 0.187323I$		
$a = 0.909858 - 0.122210I$	$1.191740 - 0.072864I$	$10.27225 - 0.64255I$
$b = 0.308390 + 0.185739I$		

Solution to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.597692 - 1.092472I$ $a = -0.328387 - 0.083666I$ $b = -0.458000 - 0.124520I$	$-4.56797 + 3.83881I$	$1.28636 - 2.41019I$
$u = -0.597692 + 1.092472I$ $a = -0.328387 + 0.083666I$ $b = -0.458000 + 0.124520I$	$-4.56797 - 3.83881I$	$1.28636 + 2.41019I$
$u = -0.594015 - 0.896392I$ $a = 0.259628 - 0.007248I$ $b = 0.286059 - 0.035184I$	$0.45918 + 2.40111I$	$3.44791 - 1.32342I$
$u = -0.594015 + 0.896392I$ $a = 0.259628 + 0.007248I$ $b = 0.286059 + 0.035184I$	$0.45918 - 2.40111I$	$3.44791 + 1.32342I$
$u = -0.578870 - 1.167114I$ $a = 0.171817 - 0.795086I$ $b = -0.97417 + 1.37815I$	$-1.62753 + 4.82509I$	$1.62654 - 10.22463I$
$u = -0.578870 + 1.167114I$ $a = 0.171817 + 0.795086I$ $b = -0.97417 - 1.37815I$	$-1.62753 - 4.82509I$	$1.62654 + 10.22463I$
$u = -0.54028 - 1.34674I$ $a = -0.071775 + 0.761191I$ $b = 0.74488 - 1.26598I$	$-7.07880 + 6.83377I$	$-3.18882 - 8.56009I$
$u = -0.54028 + 1.34674I$ $a = -0.071775 - 0.761191I$ $b = 0.74488 + 1.26598I$	$-7.07880 - 6.83377I$	$-3.18882 + 8.56009I$
$u = -0.494896 - 0.961583I$ $a = -0.319647 + 0.904467I$ $b = 1.82671 - 2.45749I$	$-1.87964 + 2.60684I$	$3.35251 + 10.49831I$
$u = -0.494896 + 0.961583I$ $a = -0.319647 - 0.904467I$ $b = 1.82671 + 2.45749I$	$-1.87964 - 2.60684I$	$3.35251 - 10.49831I$

Solution to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.437299 - 0.709945I$		
$a = -0.516450 + 0.696973I$	$-1.03551 + 1.38591I$	$-5.22665 - 5.92733I$
$b = -0.377110 + 1.113225I$		
$u = -0.437299 + 0.709945I$		
$a = -0.516450 - 0.696973I$	$-1.03551 - 1.38591I$	$-5.22665 + 5.92733I$
$b = -0.377110 - 1.113225I$		
$u = -0.381546 - 0.907422I$		
$a = 0.534318 - 0.799412I$	$-7.08795 + 1.79943I$	$1.64607 - 0.65133I$
$b = 2.87264 - 1.37415I$		
$u = -0.381546 + 0.907422I$		
$a = 0.534318 + 0.799412I$	$-7.08795 - 1.79943I$	$1.64607 + 0.65133I$
$b = 2.87264 + 1.37415I$		
$u = -0.364468 - 0.789088I$		
$a = 0.497179 - 1.218644I$	$-6.72143 + 1.46998I$	$-3.43133 - 5.90939I$
$b = 1.46483 + 2.98434I$		
$u = -0.364468 + 0.789088I$		
$a = 0.497179 + 1.218644I$	$-6.72143 - 1.46998I$	$-3.43133 + 5.90939I$
$b = 1.46483 - 2.98434I$		
$u = -0.159471 - 0.573771I$		
$a = 0.277901 + 1.116695I$	$-1.16566 + 1.36283I$	$-2.49105 - 4.63362I$
$b = -0.141782 + 0.476457I$		
$u = -0.159471 + 0.573771I$		
$a = 0.277901 - 1.116695I$	$-1.16566 - 1.36283I$	$-2.49105 + 4.63362I$
$b = -0.141782 - 0.476457I$		
$u = 0.112571 - 1.208744I$		
$a = -0.339730 - 1.044665I$	$-6.61424 + 3.82375I$	$-4.50346 - 5.15104I$
$b = 0.144323 + 0.899701I$		
$u = 0.112571 + 1.208744I$		
$a = -0.339730 + 1.044665I$	$-6.61424 - 3.82375I$	$-4.50346 + 5.15104I$
$b = 0.144323 - 0.899701I$		

Solution to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.144965 - 1.388673I$ $a = 0.349066 + 0.881495I$ $b = 0.122909 - 0.748714I$	$-13.4953 + 6.4032I$	$-6.39234 - 4.65248I$
$u = 0.144965 + 1.388673I$ $a = 0.349066 - 0.881495I$ $b = 0.122909 + 0.748714I$	$-13.4953 - 6.4032I$	$-6.39234 + 4.65248I$
$u = 0.155427 - 1.130608I$ $a = -0.731166 - 0.132523I$ $b = -0.317310 - 0.917737I$	$-8.91388 + 2.47472I$	$-3.77224 - 2.13911I$
$u = 0.155427 + 1.130608I$ $a = -0.731166 + 0.132523I$ $b = -0.317310 + 0.917737I$	$-8.91388 - 2.47472I$	$-3.77224 + 2.13911I$
$u = 0.300452 - 1.063622I$ $a = 0.605783 + 1.176205I$ $b = -0.538913 - 0.602866I$	$-5.41831 - 0.47417I$	$-4.00028 + 1.68304I$
$u = 0.300452 + 1.063622I$ $a = 0.605783 - 1.176205I$ $b = -0.538913 + 0.602866I$	$-5.41831 + 0.47417I$	$-4.00028 - 1.68304I$
$u = 0.401394 - 0.744321I$ $a = -0.644399 + 1.244546I$ $b = -1.07882 - 1.26582I$	$0.01721 - 3.43805I$	$-0.24678 - 3.46839I$
$u = 0.401394 + 0.744321I$ $a = -0.644399 - 1.244546I$ $b = -1.07882 + 1.26582I$	$0.01721 + 3.43805I$	$-0.24678 + 3.46839I$
$u = 0.403574 - 1.119675I$ $a = 0.162736 - 1.138557I$ $b = 1.88880 + 1.44116I$	$-11.48108 - 3.00110I$	$-6.29523 + 3.94269I$
$u = 0.403574 + 1.119675I$ $a = 0.162736 + 1.138557I$ $b = 1.88880 - 1.44116I$	$-11.48108 + 3.00110I$	$-6.29523 - 3.94269I$

Solution to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.417197 - 0.960057I$ $a = 1.176462 - 0.073344I$ $b = 0.092506 + 1.338630I$	$-0.683814 - 0.021668I$	$-7.29120 + 0.84008I$
$u = 0.417197 + 0.960057I$ $a = 1.176462 + 0.073344I$ $b = 0.092506 - 1.338630I$	$-0.683814 + 0.021668I$	$-7.29120 - 0.84008I$
$u = 0.455012 - 1.123044I$ $a = -0.761983 - 0.978268I$ $b = 0.412889 + 0.224443I$	$-11.13053 - 4.68214I$	$-6.02220 + 4.41776I$
$u = 0.455012 + 1.123044I$ $a = -0.761983 + 0.978268I$ $b = 0.412889 - 0.224443I$	$-11.13053 + 4.68214I$	$-6.02220 - 4.41776I$
$u = 0.537011 - 1.034034I$ $a = -0.960557 + 0.345345I$ $b = -0.36110 - 1.43359I$	$0.42286 - 5.79491I$	$0.74565 + 8.60428I$
$u = 0.537011 + 1.034034I$ $a = -0.960557 - 0.345345I$ $b = -0.36110 + 1.43359I$	$0.42286 + 5.79491I$	$0.74565 - 8.60428I$
$u = 0.539949 - 1.088433I$ $a = 0.005620 + 1.208237I$ $b = -1.78311 - 1.56416I$	$-3.79681 - 6.60858I$	$-1.76186 + 5.54202I$
$u = 0.539949 + 1.088433I$ $a = 0.005620 - 1.208237I$ $b = -1.78311 + 1.56416I$	$-3.79681 + 6.60858I$	$-1.76186 - 5.54202I$
$u = 0.587688 - 0.502670I$ $a = 0.504219 - 1.121993I$ $b = 0.533679 + 1.214779I$	$1.99050 + 1.28842I$	$6.23643 - 3.32220I$
$u = 0.587688 + 0.502670I$ $a = 0.504219 + 1.121993I$ $b = 0.533679 - 1.214779I$	$1.99050 - 1.28842I$	$6.23643 + 3.32220I$

Solution to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.595202 - 1.124180I$ $a = 0.797953 - 0.339012I$ $b = 0.47005 + 1.39138I$	$-6.06522 - 10.21103I$	$-0.83627 + 6.94060I$
$u = 0.595202 + 1.124180I$ $a = 0.797953 + 0.339012I$ $b = 0.47005 - 1.39138I$	$-6.06522 + 10.21103I$	$-0.83627 - 6.94060I$
$u = 0.613804 - 1.137651I$ $a = -0.085943 - 1.126616I$ $b = 1.77542 + 1.65606I$	$-3.35255 - 12.00268I$	$-0.12656 + 9.09333I$
$u = 0.613804 + 1.137651I$ $a = -0.085943 + 1.126616I$ $b = 1.77542 - 1.65606I$	$-3.35255 + 12.00268I$	$-0.12656 - 9.09333I$
$u = 0.625470 - 0.073721I$ $a = -1.87319 - 0.82388I$ $b = 0.799498 + 1.060929I$	$-8.25951 + 0.62444I$	$-2.71689 - 0.04866I$
$u = 0.625470 + 0.073721I$ $a = -1.87319 + 0.82388I$ $b = 0.799498 - 1.060929I$	$-8.25951 - 0.62444I$	$-2.71689 + 0.04866I$
$u = 0.626248 - 0.346796I$ $a = 1.75455 + 0.14423I$ $b = -0.523218 + 0.944583I$	$-1.69354 + 2.00274I$	$1.39705 - 1.11024I$
$u = 0.626248 + 0.346796I$ $a = 1.75455 - 0.14423I$ $b = -0.523218 - 0.944583I$	$-1.69354 - 2.00274I$	$1.39705 + 1.11024I$
$u = 0.644585 - 1.195853I$ $a = 0.096287 + 1.058208I$ $b = -1.80039 - 1.72432I$	$-9.9328 - 16.0998I$	$-3.14964 + 8.72516I$
$u = 0.644585 + 1.195853I$ $a = 0.096287 - 1.058208I$ $b = -1.80039 + 1.72432I$	$-9.9328 + 16.0998I$	$-3.14964 - 8.72516I$



Solution to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.807014 - 0.382013I$ $a = -0.316807 + 1.001679I$ $b = -0.322907 - 1.334108I$	$-3.85129 + 4.96920I$	$2.15468 - 2.88447I$
$u = 0.807014 + 0.382013I$ $a = -0.316807 - 1.001679I$ $b = -0.322907 + 1.334108I$	$-3.85129 - 4.96920I$	$2.15468 + 2.88447I$
$u = 0.854961 - 0.385031I$ $a = -1.43067 - 0.02071I$ $b = 0.433803 - 1.037999I$	$-1.08969 + 6.56887I$	$2.69460 - 5.73061I$
$u = 0.854961 + 0.385031I$ $a = -1.43067 + 0.02071I$ $b = 0.433803 + 1.037999I$	$-1.08969 - 6.56887I$	$2.69460 + 5.73061I$
$u = 0.982154 - 0.351456I$ $a = 1.305208 - 0.065083I$ $b = -0.391840 + 1.117065I$	$-7.34078 + 10.21729I$	$-1.02164 - 5.54036I$
$u = 0.982154 + 0.351456I$ $a = 1.305208 + 0.065083I$ $b = -0.391840 - 1.117065I$	$-7.34078 - 10.21729I$	$-1.02164 + 5.54036I$

$$\text{II. } I_2^u = \langle u^2 + u + 1, a - 1, 3b - 4u - 2 \rangle$$

(i) Arc colorings

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

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1 \\ u + 1 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 1 \\ \frac{4}{3}u + \frac{2}{3} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u \\ \frac{5}{3}u + \frac{4}{3} \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -u \\ u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{2}{3}u - \frac{1}{3} \\ u + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{2}{3}u + \frac{4}{3} \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{3}u + \frac{4}{3} \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{3}u + \frac{4}{3} \\ u \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes = unknown

(iv) Complex Volumes and Cusp Shapes

Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 - 0.866025I$ $a = 1.00000$ $b = -1.15470I$	0	5.33333
$u = -0.500000 + 0.866025I$ $a = 1.00000$ $b = 1.15470I$	0	5.33333

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

(i) Arc colorings

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

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1 \\ u + 1 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} u \\ -\frac{4}{3}u - \frac{5}{3} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1 \\ -\frac{2}{3}u - \frac{1}{3} \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -u \\ u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{3}u - \frac{5}{3} \\ -u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{1}{3}u - \frac{1}{3} \\ -u - 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} \frac{4}{3}u + \frac{2}{3} \\ -u - 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} \frac{4}{3}u + \frac{2}{3} \\ -u - 1 \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes = unknown

(iv) Complex Volumes and Cusp Shapes

Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 - 0.866025I$ $a = -0.500000 - 0.866025I$ $b = -1.000000 + 1.15470I$	$4.05977I$	$0.33333 - 9.23760I$
$u = -0.500000 + 0.866025I$ $a = -0.500000 + 0.866025I$ $b = -1.000000 - 1.15470I$	$-4.05977I$	$0.33333 + 9.23760I$

#### IV. u-Polynomials

Crossings	u-Polynomials at each crossings
$c_1$	$(u^2 + u + 1)^2(u^{66} + 3u^{65} + \dots + 41u + 9)$
$c_2$	$(u^2 + u + 1)^2(u^{66} + 31u^{65} + \dots + 677u + 81)$
$c_3$	$u^4(u^{66} + 3u^{65} + \dots - 720u + 432)$
$c_4$	$(u^2 - u + 1)^2(u^{66} + 3u^{65} + \dots + 41u + 9)$
$c_5$	$(u^2 - u + 1)^2(u^{66} + 3u^{65} + \dots + 3u + 1)$
$c_6$	$(3u^2 + 1)(3u^2 + 3u + 1)(9u^{66} + 6u^{65} + \dots + 14606u + 2729)$
$c_7$	$(u^2 + u + 1)^2(u^{66} + 3u^{65} + \dots + 3u + 1)$
$c_8$	$(3u^2 - 3u + 1)(3u^2 + 3u + 1)(9u^{66} + 39u^{65} + \dots - 10089u + 1177)$
$c_9$	$(u^2 + u + 1)^2(u^{66} + 3u^{65} + \dots + 3u + 1)$
$c_{10}$	$(u^2 - u + 1)^2(u^{66} + 3u^{65} + \dots + 3u + 1)$
$c_{11}$	$(u^2 - u + 1)^2(u^{66} + 3u^{65} + \dots + 3u + 1)$

### V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
$c_1, c_4$	$(y^2 + y + 1)^2(y^{66} + 31y^{65} + \dots + 677y + 81)$
$c_2$	$(y^2 + y + 1)^2(y^{66} + 11y^{65} + \dots - 42151y + 6561)$
$c_3$	$y^4(y^{66} + 25y^{65} + \dots + 1835136y + 186624)$
$c_5$	$(y^2 + y + 1)^2(y^{66} - 37y^{65} + \dots - 7y + 1)$
$c_6$	$(3y + 1)^2(9y^2 - 3y + 1)$ $(81y^{66} - 1368y^{65} + \dots + 220603054y + 7447441)$
$c_7, c_{11}$	$(y^2 + y + 1)^2(y^{66} + 63y^{65} + \dots - 7y + 1)$
$c_8$	$(9y^2 - 3y + 1)^2(81y^{66} + 2655y^{65} + \dots - 3529607y + 1385329)$
$c_9$	$(y^2 + y + 1)^2(y^{66} - 37y^{65} + \dots - 7y + 1)$
$c_{10}$	$(y^2 + y + 1)^2(y^{66} + 63y^{65} + \dots - 7y + 1)$