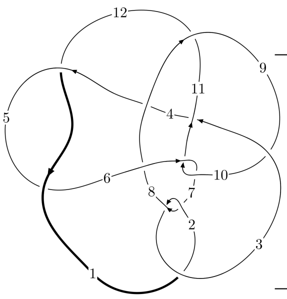
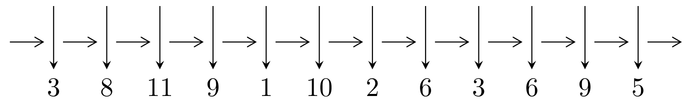
$12n_{0647}$ ($K12n_{0647}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -1.15739\times10^{38}u^{21} + 2.59794\times10^{38}u^{20} + \cdots + 5.63971\times10^{39}b + 2.94029\times10^{39},$$
$$1.52370\times10^{39}u^{21} - 3.15147\times10^{38}u^{20} + \cdots + 5.63971\times10^{39}a + 6.37897\times10^{40},\ u^{22} - u^{21} + \cdots - 7u + 1\rangle$$
$$I_2^u = \langle 2u^{10} - 2u^9 + 3u^8 - 5u^7 - u^6 - 3u^5 - 5u^4 + 8u^3 - 6u^2 + b + 8u - 1,$$
$$u^{10} - u^9 - u^7 - u^6 + u^5 - 2u^4 + 3u^3 + a - u + 2,\ u^{11} - u^8 - 3u^7 - u^6 - 3u^5 + 2u^4 + 2u^3 + 3u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 33 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.

$\boldsymbol{I_1^u = \langle -1.16\times 10^{38}u^{21}+2.60\times 10^{38}u^{20}+\cdots+5.64\times 10^{39}b+2.94\times 10^{39},\ 1.52\times 10^{39}u^{21}-3.15\times 10^{38}u^{20}+\cdots+5.64\times 10^{39}a+6.38\times 10^{40},\ u^{22}-u^{21}+\cdots-7u+1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.270174u^{21} + 0.0558800u^{20} + \cdots + 42.5373u - 11.3108 \\ 0.0205221u^{21} - 0.0460651u^{20} + \cdots + 6.82322u - 0.521354 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1.35047u^{21} + 1.35347u^{20} + \cdots - 117.421u + 7.69784 \\ -0.209846u^{21} + 0.147595u^{20} + \cdots - 6.54594u + 0.116749 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 2.15834u^{21} - 2.04296u^{20} + \cdots + 162.698u - 7.98991 \\ 0.318765u^{21} - 0.225148u^{20} + \cdots + 8.95792u - 0.0968802 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1.18213u^{21} - 1.17546u^{20} + \cdots + 97.8267u - 4.07571 \\ 0.214154u^{21} - 0.137619u^{20} + \cdots + 5.41053u - 0.123423 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -1.66406u^{21} + 1.47272u^{20} + \cdots - 96.5661u - 0.246377 \\ -0.256597u^{21} + 0.176966u^{20} + \cdots - 3.09765u + 0.0237528 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1.66406u^{21} + 1.47272u^{20} + \cdots - 96.5661u - 0.246377 \\ -0.227217u^{21} + 0.158707u^{20} + \cdots - 3.42237u - 0.167580 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1.83958u^{21} - 1.81781u^{20} + \cdots + 153.740u - 7.89303 \\ 0.318765u^{21} - 0.225148u^{20} + \cdots + 8.95792u - 0.0968802 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.297455u^{21} + 0.112963u^{20} + \cdots + 34.4842u - 10.5752 \\ 0.0338753u^{21} - 0.0534463u^{20} + \cdots + 7.05911u - 0.551156 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1.14063u^{21} - 1.20587u^{20} + \cdots + 110.875u - 7.58109 \\ 0.209846u^{21} - 0.147595u^{20} + \cdots + 6.54594u - 0.116749 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -1.01325u^{21} + 1.04755u^{20} + \cdots - 80.2731u - 9.63814$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{22} + 9u^{21} + \cdots + 637u + 49$
c_2, c_7	$u^{22} + u^{21} + \cdots - 35u - 7$
c_3, c_5, c_{12}	$u^{22} + 2u^{21} + \cdots - u + 1$
c_4	$u^{22} + 2u^{21} + \cdots - 5u + 1$
c_6, c_{10}	$u^{22} + 2u^{21} + \cdots - 66u - 19$
c_8	$u^{22} - 3u^{21} + \cdots + 85u + 23$
c_9	$u^{22} - u^{21} + \cdots - 7u + 1$
c_{11}	$u^{22} - 6u^{21} + \cdots - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{22} + 19y^{21} + \cdots - 134113y + 2401$
c_2, c_7	$y^{22} - 9y^{21} + \cdots - 637y + 49$
c_3, c_5, c_{12}	$y^{22} - 20y^{21} + \cdots - 85y + 1$
c_4	$y^{22} - 40y^{21} + \cdots - 25y + 1$
c_6, c_{10}	$y^{22} + 24y^{21} + \cdots - 4660y + 361$
c_8	$y^{22} + 29y^{21} + \cdots - 9065y + 529$
c_9	$y^{22} + 39y^{21} + \cdots + 117y + 1$
c_{11}	$y^{22} - 52y^{21} + \cdots - 36y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.922193 + 0.451969I$ $a = -0.140167 + 0.079897I$ $b = -1.135600 + 0.625368I$	$-3.68279 - 0.94185I$	$-15.4912 + 3.1680I$
$u = 0.922193 - 0.451969I$ $a = -0.140167 - 0.079897I$ $b = -1.135600 - 0.625368I$	$-3.68279 + 0.94185I$	$-15.4912 - 3.1680I$
$u = -0.918387 + 0.590013I$ $a = 0.823390 + 0.318747I$ $b = 0.795349 + 0.331962I$	$-0.88400 - 1.53763I$	$-11.84759 + 1.75542I$
$u = -0.918387 - 0.590013I$ $a = 0.823390 - 0.318747I$ $b = 0.795349 - 0.331962I$	$-0.88400 + 1.53763I$	$-11.84759 - 1.75542I$
$u = -0.015535 + 1.113510I$ $a = 0.50175 + 1.35452I$ $b = -0.093079 - 0.699578I$	$-1.24345 - 2.09162I$	$-12.32634 + 3.76479I$
$u = -0.015535 - 1.113510I$ $a = 0.50175 - 1.35452I$ $b = -0.093079 + 0.699578I$	$-1.24345 + 2.09162I$	$-12.32634 - 3.76479I$
$u = 1.14626$ $a = -0.626888$ $b = 0.600846$	-7.73402	-2.06680
$u = 0.40719 + 1.44071I$ $a = 0.364074 - 0.930543I$ $b = -0.38730 + 1.37848I$	$1.70191 + 1.70598I$	$-14.8255 - 1.4132I$
$u = 0.40719 - 1.44071I$ $a = 0.364074 + 0.930543I$ $b = -0.38730 - 1.37848I$	$1.70191 - 1.70598I$	$-14.8255 + 1.4132I$
$u = 0.317847 + 0.269046I$ $a = 2.62385 - 0.79046I$ $b = -0.085195 + 0.903480I$	$1.56638 + 2.34323I$	$-10.66731 - 5.68174I$

Solutions to I^u_1	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.317847 - 0.269046I$ $a = 2.62385 + 0.79046I$ $b = -0.085195 - 0.903480I$	$1.56638 - 2.34323I$	$-10.66731 + 5.68174I$
$u = 0.403521$ $a = 2.31915$ $b = 1.67477$	-13.6204	-17.7340
$u = -0.352636$ $a = 0.655926$ $b = -0.220728$	-0.550682	-18.1690
$u = -1.87169$ $a = -0.326736$ $b = -0.803005$	-14.8041	-12.3900
$u = 0.0195375 + 0.1177480I$ $a = -10.81320 + 5.82406I$ $b = -0.225273 + 0.760617I$	$-3.29787 + 5.70936I$	$-15.2173 - 7.8009I$
$u = 0.0195375 - 0.1177480I$ $a = -10.81320 - 5.82406I$ $b = -0.225273 - 0.760617I$	$-3.29787 - 5.70936I$	$-15.2173 + 7.8009I$
$u = 0.78622 + 2.42733I$ $a = 0.107388 - 0.674968I$ $b = 0.95174 + 2.08123I$	$5.54115 - 10.77480I$	0
$u = 0.78622 - 2.42733I$ $a = 0.107388 + 0.674968I$ $b = 0.95174 - 2.08123I$	$5.54115 + 10.77480I$	0
$u = -0.24073 + 2.68361I$ $a = -0.036423 - 0.623368I$ $b = 0.27638 + 2.41167I$	$8.25134 + 2.56104I$	0
$u = -0.24073 - 2.68361I$ $a = -0.036423 + 0.623368I$ $b = 0.27638 - 2.41167I$	$8.25134 - 2.56104I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.44105 + 2.79932I$ $a = \quad 0.058592 + 0.603776I$ $b = \quad 0.77704 - 2.39189I$	$11.22440 + 4.41241I$	0
$u = -0.44105 - 2.79932I$ $a = \quad 0.058592 - 0.603776I$ $b = \quad 0.77704 + 2.39189I$	$11.22440 - 4.41241I$	0

II. $\boldsymbol{I^u_2 = \langle 2u^{10} - 2u^9 + \cdots + b - 1,\ u^{10} - u^9 - u^7 - u^6 + u^5 - 2u^4 + 3u^3 + a - u + 2,\ u^{11} - u^8 - 3u^7 - u^6 - 3u^5 + 2u^4 + 2u^3 + 3u - 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^{10} + u^9 + u^7 + u^6 - u^5 + 2u^4 - 3u^3 + u - 2 \\ -2u^{10} + 2u^9 - 3u^8 + 5u^7 + u^6 + 3u^5 + 5u^4 - 8u^3 + 6u^2 - 8u + 1 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 2u^{10} - u^9 + u^8 - 3u^7 - 3u^6 - 2u^5 - 5u^4 + 5u^3 - u^2 + 2u + 2 \\ u^2 + 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^{10} - 2u^9 + 3u^8 - 4u^7 + 2u^6 - 2u^5 - 2u^4 + 6u^3 - 8u^2 + 8u - 4 \\ 2u^{10} - 3u^9 + 3u^8 - 6u^7 + u^6 - u^5 - 3u^4 + 11u^3 - 7u^2 + 9u - 3 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -2u^{10} + 2u^9 - 2u^8 + 4u^7 + u^6 + u^5 + 5u^4 - 7u^3 + 5u^2 - 4u \\ -2u^{10} + 2u^9 - 3u^8 + 5u^7 + u^6 + 3u^5 + 5u^4 - 8u^3 + 5u^2 - 8u + 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{10} - 2u^9 + 2u^8 - 3u^7 + u^6 - 2u^4 + 7u^3 - 5u^2 + 5u - 1 \\ -2u^{10} + 3u^9 - 3u^8 + 5u^7 - u^6 + u^5 + 4u^4 - 10u^3 + 8u^2 - 6u + 2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^{10} - 2u^9 + 2u^8 - 3u^7 + u^6 - 2u^4 + 7u^3 - 5u^2 + 5u - 1 \\ -4u^{10} + 5u^9 - 5u^8 + 10u^7 + 2u^5 + 7u^4 - 19u^3 + 12u^2 - 13u + 4 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^{10} + u^9 + 2u^7 + u^6 - u^5 + u^4 - 5u^3 - u^2 - u - 1 \\ 2u^{10} - 3u^9 + 3u^8 - 6u^7 + u^6 - u^5 - 3u^4 + 11u^3 - 7u^2 + 9u - 3 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^{10} - u^9 + 2u^8 - 3u^7 - 2u^5 - 3u^4 + 4u^3 - 5u^2 + 5u - 2 \\ -1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 2u^{10} - u^9 + u^8 - 3u^7 - 3u^6 - 2u^5 - 5u^4 + 5u^3 - 2u^2 + 2u + 1 \\ u^2 + 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= 18u^{10} - 18u^9 + 22u^8 - 45u^7 - 8u^6 - 17u^5 - 37u^4 + 76u^3 - 49u^2 + 62u - 28$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{11} - 12u^{10} + \cdots + 19u - 1$
c_2	$u^{11} - 6u^9 + u^8 + 14u^7 - 4u^6 - 17u^5 + 6u^4 + 11u^3 - 5u^2 - 3u + 1$
c_3, c_5	$u^{11} - u^{10} - 7u^9 + 6u^8 + 18u^7 - 12u^6 - 20u^5 + 8u^4 + 7u^3 + u^2 + u - 1$
c_4	$u^{11} + u^{10} + \cdots + 7u - 1$
c_6	$u^{11} + u^{10} - u^9 + 2u^8 - 2u^6 + 3u^5 - 3u^4 + u^2 - 2u + 1$
c_7	$u^{11} - 6u^9 - u^8 + 14u^7 + 4u^6 - 17u^5 - 6u^4 + 11u^3 + 5u^2 - 3u - 1$
c_8	$u^{11} + 2u^{10} + u^9 - 3u^7 - 3u^6 - 2u^5 + 2u^3 + u^2 + u - 1$
c_9	$u^{11} - u^8 - 3u^7 - u^6 - 3u^5 + 2u^4 + 2u^3 + 3u - 1$
c_{10}	$u^{11} - u^{10} - u^9 - 2u^8 + 2u^6 + 3u^5 + 3u^4 - u^2 - 2u - 1$
c_{11}	$u^{11} + 11u^{10} + \cdots + 6u + 1$
c_{12}	$u^{11} + u^{10} - 7u^9 - 6u^8 + 18u^7 + 12u^6 - 20u^5 - 8u^4 + 7u^3 - u^2 + u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{11} - 16y^{10} + \cdots + 155y - 1$
c_2, c_7	$y^{11} - 12y^{10} + \cdots + 19y - 1$
c_3, c_5, c_{12}	$y^{11} - 15y^{10} + \cdots + 3y - 1$
c_4	$y^{11} - 31y^{10} + \cdots + 15y - 1$
c_6, c_{10}	$y^{11} - 3y^{10} - 3y^9 + 6y^8 + 8y^7 + 2y^6 - 5y^5 - 9y^4 - 2y^3 + 5y^2 + 2y - 1$
c_8	$y^{11} - 2y^{10} - 5y^9 + 2y^8 + 9y^7 + 5y^6 - 2y^5 - 8y^4 - 6y^3 + 3y^2 + 3y - 1$
c_9	$y^{11} - 6y^9 - 7y^8 + 11y^7 + 27y^6 + y^5 - 36y^4 - 16y^3 + 16y^2 + 9y - 1$
c_{11}	$y^{11} - 23y^{10} + \cdots - 10y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.946698$ $a = -1.31867$ $b = 0.570624$	-10.8918	-14.2030
$u = 0.107517 + 0.921326I$ $a = -0.41829 + 1.75925I$ $b = -0.627508 - 0.776878I$	$-1.39916 + 0.85773I$	$-12.76968 + 1.45970I$
$u = 0.107517 - 0.921326I$ $a = -0.41829 - 1.75925I$ $b = -0.627508 + 0.776878I$	$-1.39916 - 0.85773I$	$-12.76968 - 1.45970I$
$u = -1.13392$ $a = -0.477082$ $b = 0.739267$	-8.01807	-30.7780
$u = -1.14734$ $a = -0.896870$ $b = -1.75156$	-12.5057	-9.97480
$u = 0.206612 + 1.130010I$ $a = 0.53803 - 1.36462I$ $b = -0.270708 + 1.018240I$	$2.65235 + 1.78346I$	$-4.71612 - 3.09744I$
$u = 0.206612 - 1.130010I$ $a = 0.53803 + 1.36462I$ $b = -0.270708 - 1.018240I$	$2.65235 - 1.78346I$	$-4.71612 + 3.09744I$
$u = -0.562339 + 1.094490I$ $a = 1.066280 + 0.765572I$ $b = 0.113141 - 1.003800I$	$-2.63212 - 4.42190I$	$-12.78415 + 2.93693I$
$u = -0.562339 - 1.094490I$ $a = 1.066280 - 0.765572I$ $b = 0.113141 + 1.003800I$	$-2.63212 + 4.42190I$	$-12.78415 - 2.93693I$
$u = 1.52035$ $a = 0.0829538$ $b = 1.10046$	-15.4881	-24.9010

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.310641$ $a = -1.76236$ $b = -1.08864$	-2.97640	-11.6020

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{11} - 12u^{10} + \cdots + 19u - 1)(u^{22} + 9u^{21} + \cdots + 637u + 49)$
c_2	$(u^{11} - 6u^9 + u^8 + 14u^7 - 4u^6 - 17u^5 + 6u^4 + 11u^3 - 5u^2 - 3u + 1)$ $\cdot (u^{22} + u^{21} + \cdots - 35u - 7)$
c_3, c_5	$(u^{11} - u^{10} - 7u^9 + 6u^8 + 18u^7 - 12u^6 - 20u^5 + 8u^4 + 7u^3 + u^2 + u - 1)$ $\cdot (u^{22} + 2u^{21} + \cdots - u + 1)$
c_4	$(u^{11} + u^{10} + \cdots + 7u - 1)(u^{22} + 2u^{21} + \cdots - 5u + 1)$
c_6	$(u^{11} + u^{10} - u^9 + 2u^8 - 2u^6 + 3u^5 - 3u^4 + u^2 - 2u + 1)$ $\cdot (u^{22} + 2u^{21} + \cdots - 66u - 19)$
c_7	$(u^{11} - 6u^9 - u^8 + 14u^7 + 4u^6 - 17u^5 - 6u^4 + 11u^3 + 5u^2 - 3u - 1)$ $\cdot (u^{22} + u^{21} + \cdots - 35u - 7)$
c_8	$(u^{11} + 2u^{10} + u^9 - 3u^7 - 3u^6 - 2u^5 + 2u^3 + u^2 + u - 1)$ $\cdot (u^{22} - 3u^{21} + \cdots + 85u + 23)$
c_9	$(u^{11} - u^8 + \cdots + 3u - 1)(u^{22} - u^{21} + \cdots - 7u + 1)$
c_{10}	$(u^{11} - u^{10} - u^9 - 2u^8 + 2u^6 + 3u^5 + 3u^4 - u^2 - 2u - 1)$ $\cdot (u^{22} + 2u^{21} + \cdots - 66u - 19)$
c_{11}	$(u^{11} + 11u^{10} + \cdots + 6u + 1)(u^{22} - 6u^{21} + \cdots - 2u + 1)$
c_{12}	$(u^{11} + u^{10} - 7u^9 - 6u^8 + 18u^7 + 12u^6 - 20u^5 - 8u^4 + 7u^3 - u^2 + u + 1)$ $\cdot (u^{22} + 2u^{21} + \cdots - u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{11} - 16y^{10} + \cdots + 155y - 1)(y^{22} + 19y^{21} + \cdots - 134113y + 2401)$
c_2, c_7	$(y^{11} - 12y^{10} + \cdots + 19y - 1)(y^{22} - 9y^{21} + \cdots - 637y + 49)$
c_3, c_5, c_{12}	$(y^{11} - 15y^{10} + \cdots + 3y - 1)(y^{22} - 20y^{21} + \cdots - 85y + 1)$
c_4	$(y^{11} - 31y^{10} + \cdots + 15y - 1)(y^{22} - 40y^{21} + \cdots - 25y + 1)$
c_6, c_{10}	$(y^{11} - 3y^{10} - 3y^9 + 6y^8 + 8y^7 + 2y^6 - 5y^5 - 9y^4 - 2y^3 + 5y^2 + 2y - 1)$ $\cdot (y^{22} + 24y^{21} + \cdots - 4660y + 361)$
c_8	$(y^{11} - 2y^{10} - 5y^9 + 2y^8 + 9y^7 + 5y^6 - 2y^5 - 8y^4 - 6y^3 + 3y^2 + 3y - 1)$ $\cdot (y^{22} + 29y^{21} + \cdots - 9065y + 529)$
c_9	$(y^{11} - 6y^9 - 7y^8 + 11y^7 + 27y^6 + y^5 - 36y^4 - 16y^3 + 16y^2 + 9y - 1)$ $\cdot (y^{22} + 39y^{21} + \cdots + 117y + 1)$
c_{11}	$(y^{11} - 23y^{10} + \cdots - 10y - 1)(y^{22} - 52y^{21} + \cdots - 36y + 1)$