In[1]:=
```
SetDirectory["C:\\drorbn\\AcademicPensieve\\2010-08"];
<< KnotTheory`
<< pA.m
```

```
Loading KnotTheory` version of April 20, 2009, 14:18:34.482.
Read more at http://katlas.org/wiki/KnotTheory.
```

In[4]:=
```
pA[pd_PD] := Module[
   {cd, res, vars},
   cd = CircuitDiagram @@ (pd /. x_X :> If[PositiveQ[x], Xp @@ x, Xm @@ x]);
   cd = cd /. {
      Xp[i_, 1, k_, l_] :> Xp[i, 0, k, l],
      Xp[i_, j_, 1, l_] :> Xp[i, j, 0, l],
      Xm[i_, j_, 1, l_] :> Xm[i, j, 0, l],
      Xm[i_, j_, k_, 1] :> Xm[i, j, k, 0]
     };
   res = Last[pA[cd]] /. {W[i_] :> i};
   vars = Union[Cases[res, t[i_] :> i, Infinity]];
   res /. Thread[(t /@ vars) -> (Array[t, {Length[vars]}])]
  ];
pA[other_] := pA[PD[other]]
```

In[6]:=
```
Bor = Link["L6a4"];
Simplify[{pA[Bor], MultivariableAlexander[Bor][t]}]
```

```
KnotTheory::loading : Loading precomputed data in PD4Links`.

KnotTheory::loading : Loading precomputed data in MultivariableAlexander4Links`.
```

Out[7]=
$$\left\{-(-1+t[1])^2\,(-1+t[2])\,(-1+t[3])\,t[3],\ \frac{(-1+t[1])\,(-1+t[2])\,(-1+t[3])}{\sqrt{t[1]}\,\sqrt{t[2]}\,\sqrt{t[3]}}\right\}$$

In[8]:=
```
wBor1 = CircuitDiagram[
  Xp[1, 6, 2, 5], Xm[7, 2, 8, 3], Xm[3, 6, 4, 5], Xp[8, 0, 7, 4]
 ]
```

Out[8]=
```
CircuitDiagram[Xp[1, 6, 2, 5], Xm[7, 2, 8, 3], Xm[3, 6, 4, 5], Xp[8, 0, 7, 4]]
```

In[9]:=
```
pA[wBor1]
```

Out[9]=
$$\text{AHD}\left[(t[6]==t[5])^2\,(t[7]==t[8])\,(t[0]==t[1]==t[2]==t[3]==t[4]),\{1\},W[0],0\right]$$

In[11]:=
```
wBor2 = CircuitDiagram[
  Xp[1, 6, 2, 5], Xp[2, 8, 3, 7], Xm[3, 6, 4, 5], Xm[4, 8, 0, 7]
 ]
```

Out[11]=
```
CircuitDiagram[Xp[1, 6, 2, 5], Xp[2, 8, 3, 7], Xm[3, 6, 4, 5], Xm[4, 8, 0, 7]]
```

In[12]:=
```
pA[wBor2]
```

Out[12]=
$$\text{AHD}\left[(t[6]==t[5])^2\,(t[8]==t[7])^2\,(t[0]==t[1]==t[2]==t[3]==t[4]),\{1\},W[0],0\right]$$

In[13]:=
```
wBor3 = CircuitDiagram[
  Xp[1, 7, 2, 6], Xm[8, 2, 9, 3], Xm[3, 5, 4, 6], Xp[9, 1, 8, 4]
 ]
```

Out[13]=
```
CircuitDiagram[Xp[1, 7, 2, 6], Xm[8, 2, 9, 3], Xm[3, 5, 4, 6], Xp[9, 1, 8, 4]]
```

In[14]:=
```
pA[wBor3]
```

Out[14]=
```
AHD[(t[8] == t[9]) (t[5] == t[6] == t[7]) (t[1] == t[2] == t[3] == t[4]), {5}, W[7], 0]
```

In[15]:=
```
wBor4 = CircuitDiagram[
  Xp[1, 7, 2, 6], Xp[2, 9, 3, 8], Xm[3, 5, 4, 6], Xm[4, 9, 1, 8]
 ]
```

Out[15]=
```
CircuitDiagram[Xp[1, 7, 2, 6], Xp[2, 9, 3, 8], Xm[3, 5, 4, 6], Xm[4, 9, 1, 8]]
```

In[16]:=
```
pA[wBor4]
```

Out[16]=
```
AHD[(t[9] == t[8])^2 (t[5] == t[6] == t[7]) (t[1] == t[2] == t[3] == t[4]), {5}, W[7], 0]
```