```
In[•]:= Clear[λ];
        K = Knot[8, 2]
Out[•]= Knot[8, 2]

In[•]:= t = 1 - λ^2; r = t + t*;

In[•]:= aps =
         Times @@ PD[K] /. x : X[i_, j_, k_, l_] :> If[PositiveQ[x], X+[j, k, -l, -i], X-[-j, k, l, -i]]
Out[•]= X-[-16, 10, 1, -9] X-[-14, 8, 15, -7] X-[-12, 6, 13, -5] X-[-8, 16, 9, -15]
        X-[-6, 14, 7, -13] X-[-4, 2, 5, -1] X+[3, 12, -2, -11] X+[11, 4, -10, -3]

In[•]:= soup = Times @@ aps /. (Xp | Xm)[i_, j_, k_, l_] :> a[i, -l] a[j, -i] a[k, -j] a[l, -k]
Out[•]= a[-16, 9] a[-15, -9] a[-14, 7] a[-13, -7] a[-12, 5] a[-11, 2] a[-10, -4]
        a[-9, -1] a[-8, 15] a[-7, -15] a[-6, 13] a[-5, -13] a[-4, 1] a[-3, 10] a[-2, -12]
        a[-1, -5] a[1, -10] a[2, 4] a[3, 11] a[4, -11] a[5, -2] a[6, 12] a[7, -14] a[8, 14]
        a[9, -16] a[10, 16] a[11, 3] a[12, -3] a[13, -6] a[14, 6] a[15, -8] a[16, 8]

In[•]:= cs = aps /. _[X][i_, j_, k_, l_] :> a[i, -l] a[j, -i] a[k, -j] a[l, -k] //.
          a[i_, x___, j_] a[j_, y___, k_] :> a[i, x, j, y, k]
Out[•]= a[-16, 9, -16] a[-14, 7, -14] a[-8, 15, -8] a[-6, 13, -6]
        a[3, 11, 3] a[1, -10, -4, 1] a[4, -11, 2, 4] a[5, -2, -12, 5]
        a[-1, -5, -13, -7, -15, -9, -1] a[-3, 10, 16, 8, 14, 6, 12, -3]

In[•]:= A = Table[0, Length@cs, Length@cs]
Out[•]= {{0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0, 0, 0},
        {0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0, 0, 0},
        {0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0, 0, 0},
        {0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0, 0, 0}}

In[•]:= Do[
         is = Position[cs, #][[1, 1]] & /@ List @@ x;
         A[[is, is]] += If[Head[x] === Xp,
```

$$\begin{pmatrix} 0 & t^* & 0 & -t^* \\ t & -r & -t^* & 2t^* \\ 0 & -t & 0 & t \\ -t & 2t & t^* & -r \end{pmatrix}, \begin{pmatrix} r & -t & -2t^* & t^* \\ -t^* & 0 & t^* & 0 \\ -2t & t & r & -t^* \\ t & 0 & -t & 0 \end{pmatrix}$$

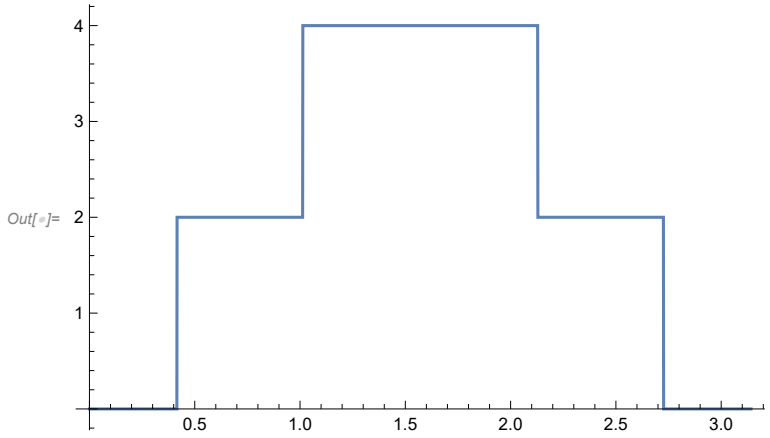
```
          ],
         {x, aps}
        ]
```

In[•]:=
```
A
```

Out[•]=
```
{{4 - 2 λ^2 - 2 Conjugate[λ]^2, 0, -2 × (1 - λ^2), 0, 0, -2 × (1 - Conjugate[λ]^2), 0, 0, 0, 0},
 {0, 4 - 2 λ^2 - 2 Conjugate[λ]^2, -2 × (1 - Conjugate[λ]^2), -2 × (1 - λ^2), 0, 0, 0, 0, 0, 0},
 {-2 × (1 - Conjugate[λ]^2), -2 × (1 - λ^2), 4 - 2 λ^2 - 2 Conjugate[λ]^2, 0, 0, 0, 0, 0, 0, 0},
 {0, -2 × (1 - Conjugate[λ]^2), 0, 4 - 2 λ^2 - 2 Conjugate[λ]^2, 0, 0, 0, -2 × (1 - λ^2), 0, 0},
 {0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {-2 × (1 - λ^2), 0, 0, 0, 0, 4 - 2 λ^2 - 2 Conjugate[λ]^2,
  -2 + 2 λ^2, -2 × (1 - Conjugate[λ]^2), 0, 2 - 2 λ^2}, {0, 0, 0, 0, 0, -2 + 2 Conjugate[λ]^2,
  -4 + 2 λ^2 + 2 Conjugate[λ]^2, 2 - 2 Conjugate[λ]^2, 0, 2 × (1 - λ^2) + 2 × (1 - Conjugate[λ]^2)},
 {0, 0, 0, -2 × (1 - Conjugate[λ]^2), 0, -2 × (1 - λ^2), 2 - 2 λ^2, 4 - 2 λ^2 - 2 Conjugate[λ]^2,
  0, -2 + 2 λ^2}, {0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 2 - 2 Conjugate[λ]^2,
  2 × (1 - λ^2) + 2 × (1 - Conjugate[λ]^2), -2 + 2 Conjugate[λ]^2, 0, -4 + 2 λ^2 + 2 Conjugate[λ]^2}}
```

In[•]:=
```
Plot[MatrixSignature[A /. λ → e^(i t)], {t, 0, π}]
```

Out[•]=



In[•]:=
```
Bed[K_, λ_] := Module[{t, r, aps, cs, a, A, is},
  t = 1 - λ^2; r = t + t*;
  aps = Times @@ PD[K] /.
    x : X[i_, j_, k_, l_] :> If[PositiveQ[x], X+[j, k, -l, -i], X-[-j, k, l, -i]];
  cs = aps /. _[X][i_, j_, k_, l_] :> a[i, -l] a[j, -i] a[k, -j] a[l, -k] //.
    a[i_, x___, j_] a[j_, y___, k_] :> a[i, x, j, y, k];
  A = Table[0, Length@cs, Length@cs];
  Do[is = Position[cs, #][[1, 1]] & /@ List @@ x;
   A[[is, is]] += If[Head[x] === X+,
     {{0, t*, 0, -t*}, {t, -r, -t*, 2 t*}, {0, -t, 0, t}, {-t, 2 t, t*, -r}},
     {{r, -t, -2 t*, t*}, {-t*, 0, t*, 0}, {-2 t, t, r, -t*}, {t, 0, -t, 0}}
    ],
   {x, List @@ aps}];
  MatrixSignature[A]
 ];
```

In[•]:= `{X+, X-} // FullForm`

Out[•]//FullForm= `List[SubPlus[X], SubMinus[X]]`

In[•]:= `a.b // FullForm`

Out[•]//FullForm= `Dot[a, b]`