Pensieve header: A - A^T experiments.

```
In[•]:= SetDirectory["C:\\drorbn\\AcademicPensieve\\Projects\\APAI"];
```

```
In[•]:= Once[<< KnotTheory`; << Rot.m];
```

```
Loading KnotTheory` version of February 2, 2020, 10:53:45.2097.
Read more at http://katlas.org/wiki/KnotTheory.

Loading Rot.m from http://drorbn.net/APAI to compute rotation numbers.
```

```
R1[s_, i_, j_] := s (gji (gj*,j + gj,j* - gij) - gii (gj,j* - 1) - 1 / 2);
ρ[K_] := ρ[K] = Module[{Cs, φ, n, A, s, i, j, k, Δ, G, ρ1},
    {Cs, φ} = Rot[K]; n = Length[Cs];
    A = IdentityMatrix[2 n + 1];
    Cases[Cs, {s_, i_, j_} :> (A[[{i, j}, {i + 1, j + 1}]] += ( -T^s  T^s - 1
                                                                 0      -1 ))];
    Δ = T^((-Total[φ] - Total[Cs[[All, 1]]]) / 2) Det[A];
    G = Inverse[A];
    ρ1 = Σ_{k=1}^{n} R1 @@ Cs[[k]] - Σ_{k=1}^{2 n} φ[[k]] (gkk - 1 / 2);
    Factor@{Δ, Δ^2 ρ1 /. α_^+ :> α + 1 /. gα_,β_ :> G[[α, β]]}];
```

```
In[•]:= CompareMatrices[A_, B_] := Grid[
  MapThread[Column@*List, {A, B} /. 0 → "", 2],
  Frame → All, ItemSize → All
 ]
```

```
In[•]:= CompareMatrices[IdentityMatrix[2], Table[1, 2, 2]]
```

```
Out[•]=
```

1	
1	1

	1
1	1

```
In[•]:= Table[Hue[k / 16], {k, 0, 16}]
```

```
Out[•]=
```

{■, ■, ■, ■, ■, ■, ■, ■, ■, ■, ■, ■, ■, ■, ■, ■, ■}

```
In[•]:= AAT[K_] := Module[{Cs, φ, n, A, α, β, k, s, i, j},
          {Cs, φ} = Rot[K]; n = Length[Cs];
          A = IdentityMatrix[2 n + 1];
          For[k = 1, k ≤ n, k++,
           {s, i, j} = Cs[[k]];
           A[[{i, j}, {i + 1, j + 1}]] += Map[Style[#, Background → Hue[k/(2 n)]] &, ((-T^s  T^s - 1)
                                                                                      ("0"    -1)), {2}]
          ];
          CompareMatrices[A, A^T]
         ]

In[•]:= AAT[Knot[6, 3]]

Out[•]=
```

1 1	$-T$			$-1+T$								
$-T$	1 1	-1	0				0					
	-1	1 1	$-T$			$-1+T$		$-1+T$				
	0	$-T$	1 1	-1			0					
$-1+T$			-1	1 1	$-\frac{1}{T}$					$-1+\frac{1}{T}$		
				$-\frac{1}{T}$	1 1	-1			0		0	
		$-1+T$			-1	1 1	$-T$			$-1+\frac{1}{T}$		
	0		0			$-T$	1 1	-1				
		$-1+T$					-1	1 1	$-\frac{1}{T}$			$-1+\frac{1}{T}$
					0			$-\frac{1}{T}$	1 1	-1	0	
				$-1+\frac{1}{T}$		$-1+\frac{1}{T}$			-1	1 1	$-\frac{1}{T}$	
					0				0	$-\frac{1}{T}$	1 1	-1
								$-1+\frac{1}{T}$			-1	1 1