

Pensieve header: Testing OneCo.

**Warning:  $b \rightarrow B$ ,  $\beta \rightarrow b$  !**

```
SetDirectory["C:\\drorbn\\AcademicPensieve\\Projects\\OneCo-1606"];
<< OneCo.m
```

```
Table[x  $\rightarrow$  b[U@x, a1,2], {x, {c1, c2, u1, u2, w1, w2, c3, u3, w3}}] // Column
```

```
c1  $\rightarrow$  U[u1, w2]
c2  $\rightarrow$  -U[u1, w2]
u1  $\rightarrow$   $\in$  U[c2, u1]
u2  $\rightarrow$   $\beta_2$  U[u1] -  $\beta_1$  U[u2] +  $\in$  U[c1, u2] - 2  $\in$  U[c2, u1]
w1  $\rightarrow$  - $\beta_1$  U[w2] + 2  $\in$  U[c1, w2] -  $\in$  U[c2, w1]
w2  $\rightarrow$   $\beta_1$  U[w2] -  $\in$  U[c1, w2]
c3  $\rightarrow$   $\emptyset$ 
u3  $\rightarrow$   $\emptyset$ 
w3  $\rightarrow$   $\emptyset$ 
```

```
b[a1,3, a2,3] + b[a1,2, a2,3] + b[a1,2, a1,3]
```

```
 $\emptyset$ 
```

```
{t1 = b[a1,2, a1,3], t2 =  $\in$  U@c3 ** a1,2 -  $\in$  U@c2 ** a1,3, t1 - t2} // Expand // Column
```

```
- $\in$  U[c2, u1, w3] +  $\in$  U[c3, u1, w2]
- $\in$  U[c2, u1, w3] +  $\in$  U[c3, u1, w2]
 $\emptyset$ 
```

```
{t1 = b[a1,3, a2,3], t2 =  $\beta c_2$  ** a1,3 -  $\beta c_1$  ** a2,3, t1 - t2} // Expand // Column
```

```
 $\beta_2$  U[u1, w3] -  $\beta_1$  U[u2, w3] +  $\in$  U[c1, u2, w3] -  $\in$  U[c2, u1, w3]
 $\beta_2$  U[u1, w3] -  $\beta_1$  U[u2, w3] +  $\in$  U[c1, u2, w3] -  $\in$  U[c2, u1, w3]
 $\emptyset$ 
```

```
{t1 = a1,3 ** a2,4 - a1,4 ** a2,3,
  t2 = a1,3 **  $\beta c_2$  ** U@c4 - a2,3 **  $\beta c_1$  ** U@c4 - a1,4 **  $\beta c_2$  ** U@c3 + a2,4 **  $\beta c_1$  ** U@c3,
  t1 - t2
} // Column
```

```
- $\beta_2$  U[c3, u1, w4] +  $\beta_1$  U[c3, u2, w4] +  $\beta_2$  U[c4, u1, w3] -  $\beta_1$  U[c4, u2, w3] -
 $\in$  U[c1, c3, u2, w4] +  $\in$  U[c1, c4, u2, w3] +  $\in$  U[c2, c3, u1, w4] -  $\in$  U[c2, c4, u1, w3]
- $\beta_2$  U[c3, u1, w4] +  $\beta_1$  U[c3, u2, w4] +  $\beta_2$  U[c4, u1, w3] -  $\beta_1$  U[c4, u2, w3] -
 $\in$  U[c1, c3, u2, w4] +  $\in$  U[c1, c4, u2, w3] +  $\in$  U[c2, c3, u1, w4] -  $\in$  U[c2, c4, u1, w3]
 $\emptyset$ 
```

**LBasis[2]**

```
{U[], ∈ U[], U[c1], U[c2], U[u1], U[u2], U[w1], U[w2], ∈ U[c1], ∈ U[c2], ∈ U[u1], ∈ U[u2],
∈ U[w1], ∈ U[w2], U[u1, w1], U[u1, w2], U[u2, w1], U[u2, w2], ∈ U[c1, c1], ∈ U[c1, c2],
∈ U[c1, u1], ∈ U[c1, u2], ∈ U[c1, w1], ∈ U[c1, w2], ∈ U[c2, c2], ∈ U[c2, u1], ∈ U[c2, u2],
∈ U[c2, w1], ∈ U[c2, w2], ∈ U[u1, w1], ∈ U[u1, w2], ∈ U[u2, w1], ∈ U[u2, w2], ∈ U[c1, u1, w1],
∈ U[c1, u1, w2], ∈ U[c1, u2, w1], ∈ U[c1, u2, w2], ∈ U[c2, u1, w1], ∈ U[c2, u1, w2],
∈ U[c2, u2, w1], ∈ U[c2, u2, w2], ∈ U[u1, u1, w1], ∈ U[u1, u1, w2], ∈ U[u1, u2, w1],
∈ U[u1, u2, w2], ∈ U[u1, w1, w1], ∈ U[u1, w1, w2], ∈ U[u1, w2, w2], ∈ U[u2, u2, w1],
∈ U[u2, u2, w2], ∈ U[u2, w1, w1], ∈ U[u2, w1, w2], ∈ U[u2, w2, w2], ∈ U[u1, u1, w1, w1],
∈ U[u1, u1, w1, w2], ∈ U[u1, u1, w2, w2], ∈ U[u1, u2, w1, w1], ∈ U[u1, u2, w1, w2],
∈ U[u1, u2, w2, w2], ∈ U[u2, u2, w1, w1], ∈ U[u2, u2, w1, w2], ∈ U[u2, u2, w2, w2] }
```

```
bas = LBasis[2];
```

```
Table[b[x, y] + b[y, x], {x, bas}, {y, bas}] // Flatten // Union
```

```
{0}
```

```
bas = LBasis[2]; Timing[
```

```
Table[
```

```
{x, y, z} = xyz;
```

```
Simp[b[b[x, y], z] + b[b[y, z], x] + b[b[z, x], y]],
```

```
{xyz, Subsets[bas, {3}]}]
```

```
// Flatten // Union
```

```
]
```

```
{29.1563, {0}}
```

```
(# → Ea[τ, i, j][U@#] - AutoEa[τ, i, j][U@#]) & /@ {ci, cj, ui, uj, wi, wj}
```

```
{ci → 0, cj → 0, ui → 0, uj → 0, wi → 0, wj → 0}
```

```

bas = U/@Flatten@Table[yk, {y, {c, u, w}}, {k, 3}];
Table[{x, y} → Expand[Ea[τ, 1, 2][b[x, y]] - b[Ea[τ, 1, 2][x], Ea[τ, 1, 2][y]]],
{x, bas}, {y, bas}]
{
  {{U[c1], U[c1]} → 0, {U[c1], U[c2]} → 0, {U[c1], U[c3]} → 0,
   {U[c1], U[u1]} → 0, {U[c1], U[u2]} → 0, {U[c1], U[u3]} → 0,
   {U[c1], U[w1]} → 0, {U[c1], U[w2]} → 0, {U[c1], U[w3]} → 0},
  {{U[c2], U[c1]} → 0, {U[c2], U[c2]} → 0, {U[c2], U[c3]} → 0, {U[c2], U[u1]} → 0,
   {U[c2], U[u2]} → 0, {U[c2], U[u3]} → 0, {U[c2], U[w1]} → 0, {U[c2], U[w2]} → 0,
   {U[c2], U[w3]} → 0}, {{U[c3], U[c1]} → 0, {U[c3], U[c2]} → 0,
   {U[c3], U[c3]} → 0, {U[c3], U[u1]} → 0, {U[c3], U[u2]} → 0, {U[c3], U[u3]} → 0,
   {U[c3], U[w1]} → 0, {U[c3], U[w2]} → 0, {U[c3], U[w3]} → 0},
  {{U[u1], U[c1]} → 0, {U[u1], U[c2]} → 0, {U[u1], U[c3]} → 0, {U[u1], U[u1]} → 0,
   {U[u1], U[u2]} → 0, {U[u1], U[u3]} → 0, {U[u1], U[w1]} → 0, {U[u1], U[w2]} → 0,
   {U[u1], U[w3]} → 0}, {{U[u2], U[c1]} → 0, {U[u2], U[c2]} → 0,
   {U[u2], U[c3]} → 0, {U[u2], U[u1]} → 0, {U[u2], U[u2]} → 0, {U[u2], U[u3]} → 0,
   {U[u2], U[w1]} → 0, {U[u2], U[w2]} → 0, {U[u2], U[w3]} → 0},
  {{U[u3], U[c1]} → 0, {U[u3], U[c2]} → 0, {U[u3], U[c3]} → 0, {U[u3], U[u1]} → 0,
   {U[u3], U[u2]} → 0, {U[u3], U[u3]} → 0, {U[u3], U[w1]} → 0, {U[u3], U[w2]} → 0,
   {U[u3], U[w3]} → 0}, {{U[w1], U[c1]} → 0, {U[w1], U[c2]} → 0,
   {U[w1], U[c3]} → 0, {U[w1], U[u1]} → 0, {U[w1], U[u2]} → 0, {U[w1], U[u3]} → 0,
   {U[w1], U[w1]} → 0, {U[w1], U[w2]} → 0, {U[w1], U[w3]} → 0},
  {{U[w2], U[c1]} → 0, {U[w2], U[c2]} → 0, {U[w2], U[c3]} → 0, {U[w2], U[u1]} → 0,
   {U[w2], U[u2]} → 0, {U[w2], U[u3]} → 0, {U[w2], U[w1]} → 0, {U[w2], U[w2]} → 0,
   {U[w2], U[w3]} → 0}, {{U[w3], U[c1]} → 0, {U[w3], U[c2]} → 0,
   {U[w3], U[c3]} → 0, {U[w3], U[u1]} → 0, {U[w3], U[u2]} → 0, {U[w3], U[u3]} → 0,
   {U[w3], U[w1]} → 0, {U[w3], U[w2]} → 0, {U[w3], U[w3]} → 0}}

```