

Pensieve Header: Conversion into the RVK (Rotational Virtual Knot) presentation.

```
In[ ]:= RVK::usage =
  "RVK[xs, rots] represents a Rotational Virtual Knot with a list of n Xp/Xm crossings
  xs and a length 2n list of rotation numbers rots. Crossing
  sites are indexed 1 through 2n, and rots[[k]] is the rotation
  between site k-1 and site k. RVK is also a casting operator
  converting to the RVK presentation from other knot presentations.";
```

```
In[ ]:= PD[epd_EPD] := PD@@epd /. {Xi,j => X[j, i+1, j+1, i], X̄i,j => X[j, i, j+1, i+1]}
```

```
RVK[pd_PD] := Module[{n, xs, x, rots, Xp, Xm, front = {1}, k},
  n = Length@pd; rots = Table[0, {2 n}];
  xs = Cases[pd, x_X => {Xp[x[[4]], x[[1]] PositiveQ@x,
                       Xm[x[[2]], x[[1]] True}];
  For[k = 1, k <= 2 n, ++k,
    If[FreeQ[front, -k],
      front = Flatten@Replace[front, k -> (xs /. {
        Xp[k, l_] | Xm[l_, k] => {l+1, k+1, -l},
        Xp[l_, k] | Xm[k, l_] => (++rots[[l]]; {-l, k+1, l+1}),
        _Xp | _Xm => {}
      })], {1}],
    Cases[front, k | -k] /. {k, -k} => --rots[[k]];
  ];
  RVK[xs /. {Xp[i_, j_] => {+1, i, j}, Xm[i_, j_] => {-1, i, j}}, rots];
RVK[rvk_RVK] := rvk;
RVK[K_] := RVK[PD[K]];
```