Pensieve Header: Computing rotation numbers. Based on Common.nb at pensieve://Classes/21-1350-KnotTheory/.

```
Print["Loading Rot.m from http://drorbn.net/ubc24/ap to compute rotation numbers."]
```

```
Rot::usage =
  "Rot[K] where K is any n-crossing knot presentation returns {Cs, φ}, where
    Cs is a length n list of crossings as triples {s,i,j}
    and φ is a lengtth 2n list of rotation numbers.";
```

In[ ]:=
```
PD[epd_EPD] := PD @@ epd /. {X_{i_,j_} :> X[j, i + 1, j + 1, i], X̄_{i_,j_} :> X[j, i, j + 1, i + 1]}
```

```
Rot[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⟧;
     ]
    ];
    {xs /. {Xp[i_, j_] :> {+1, i, j}, Xm[i_, j_] :> {-1, i, j}}, rots}];
Rot[K_] := Rot[PD[K]];
```