

TopD@k gives a planar diagram notation

for the knot  $k$ , which is given in modified DT form.

TopD@k\_MDT := TopD@k =

Block[

{a = Abs /@ k, n = Length@k, o, r}, o = Ordering@a;

Do[If[PlanarGraphQ@Graph[Join@@Table[

Array[{v, # - 1}  $\rightarrow$  {v, #} &, 3]  $\cup$

{v, 0}  $\rightarrow$  {v, 3}]  $\cup$

Join@@ ({v, #[1]}  $\rightarrow$

{#[2], #[1] + (1 - c[[v]] c[[#[2]]]) / 2},

{v, 3 - #[1]}  $\rightarrow$  {#[2], #[1] +

(1 + c[[v]] c[[#[2]]) / 2}] &

/@ ({#, o[[Mod[v - # / 2, n, 1]]]} & /@

{0, 2})),

{v, n}]]], r = c;

Break[]], {c, Tuples[{1, -1}, n]};

PD@@ (X<sub>##</sub> &@@@

Array[{2 # - 1, 2 a[[#], 2 #, Mod[2 a[[#] + 1, 2 n, 1]]

[[If[Sign@k[[#]] == 1, ;;, {2, 3, 4, 1}]]

[[If[r[[#]] == 1, ;;, {1, 4, 3, 2}]]] &, n)]];