5.342 two_orth_column

DESCRIPTION LINKS GRAPH

Origin Used for defining diffn_column.

Constraint two_orth_column(ORTHOTOPE1, ORTHOTOPE2, DIM)

Type
```
ORTHOTOPE : collection(ori−dvar, siz−dvar, end−dvar)
```

Arguments
```
ORTHOTOPE1 : ORTHOTOPE
ORTHOTOPE2 : ORTHOTOPE
DIM        : int
```

Restrictions
$|\texttt{ORTHOTOPE}| > 0$
require_at_least$(2, \texttt{ORTHOTOPE}, [\texttt{ori}, \texttt{siz}, \texttt{end}])$
$\texttt{ORTHOTOPE.siz} \geq 0$
$\texttt{ORTHOTOPE.ori} \leq \texttt{ORTHOTOPE.end}$
$|\texttt{ORTHOTOPE1}| = |\texttt{ORTHOTOPE2}|$
orth_link_ori_siz_end(ORTHOTOPE1)
orth_link_ori_siz_end(ORTHOTOPE2)
$\texttt{DIM} > 0$
$\texttt{DIM} \leq |\texttt{ORTHOTOPE1}|$

Purpose Let P_1 and P_2 respectively denote the projections of ORTHOTOPE1 and ORTHOTOPE2 in dimension DIM. If P_1 and P_2 overlap then the size of their intersection is equal to the size of ORTHOTOPE1 in dimension DIM, as well as to the size of ORTHOTOPE2 in dimension DIM.

Example
$$\left(\begin{array}{l} \langle \texttt{ori}-1\ \texttt{siz}-3\ \texttt{end}-4, \texttt{ori}-1\ \texttt{siz}-1\ \texttt{end}-2\rangle, \\ \langle \texttt{ori}-4\ \texttt{siz}-2\ \texttt{end}-6, \texttt{ori}-1\ \texttt{siz}-3\ \texttt{end}-4\rangle, 1 \end{array} \right)$$

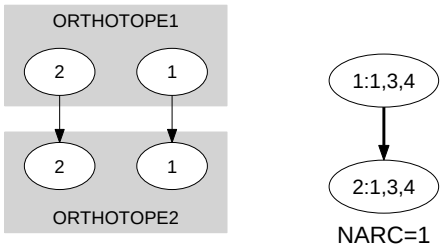

Figure 5.615: Initial and final graph of the two_orth_column constraint

Symmetry Arguments are permutable w.r.t. permutation (`ORTHOTOPE1`, `ORTHOTOPE2`) (`DIM`).

Used in `diffn_column`.

See also **related:** `diffn` *(an extension of the* `diffn` *constraint)*.

Keywords **geometry:** geometrical constraint, positioning constraint, orthotope, guillotine cut.

Arc input(s) ORTHOTOPE1 ORTHOTOPE2

Arc generator $PRODUCT(=) \mapsto \texttt{collection}(\texttt{orthotope1}, \texttt{orthotope2})$

Arc arity 2

Arc constraint(s)

$$\bigwedge \left(\begin{array}{l} \texttt{orthotope1.key} = \texttt{DIM}, \\ \texttt{orthotope1.ori} < \texttt{orthotope2.end}, \\ \texttt{orthotope2.ori} < \texttt{orthotope1.end}, \\ \texttt{orthotope1.siz} > 0, \\ \texttt{orthotope2.siz} > 0 \end{array} \right) \Rightarrow \bigwedge \left(\begin{array}{l} \texttt{min}(\texttt{orthotope1.end}, \texttt{orthotope2.end}) - \\ \texttt{max}(\texttt{orthotope1.ori}, \texttt{orthotope2.ori}) \\ \texttt{orthotope1.siz} \\ \texttt{orthotope1.siz} = \texttt{orthotope2.siz} \end{array} = , \right)$$

Graph property(ies) $\mathbf{NARC} = 1$