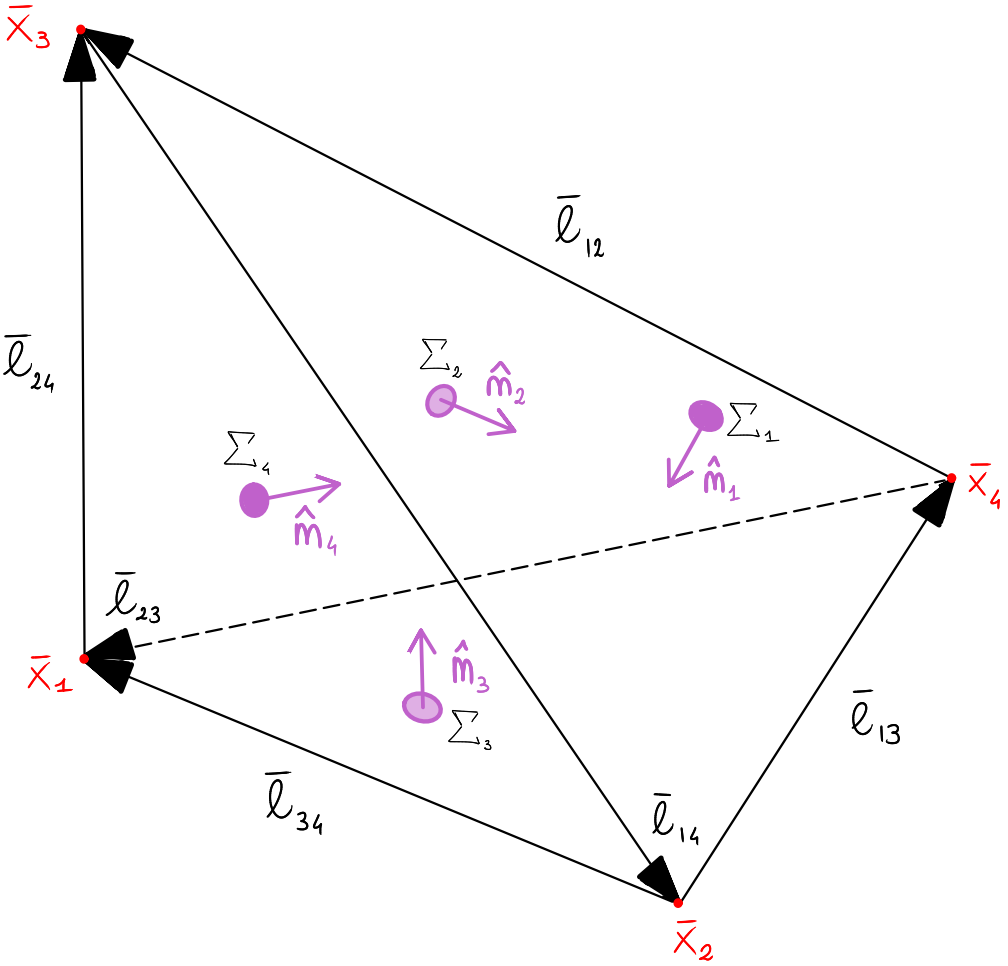
Scalar finite elements



Numbering of the nodes

The first and last nodes are chosen arbitraly. The remaining nodes are numbered in counter-clockwise order for a given face (RHR applied to the face with inward normal vector).

Numbering of the faces

The j-th face is opposite to the j-th node.

Numbering of the edges

Each edge is identified by two indices (j,k) which correspond to the indices of the j-th and k-th face sharing the edge.

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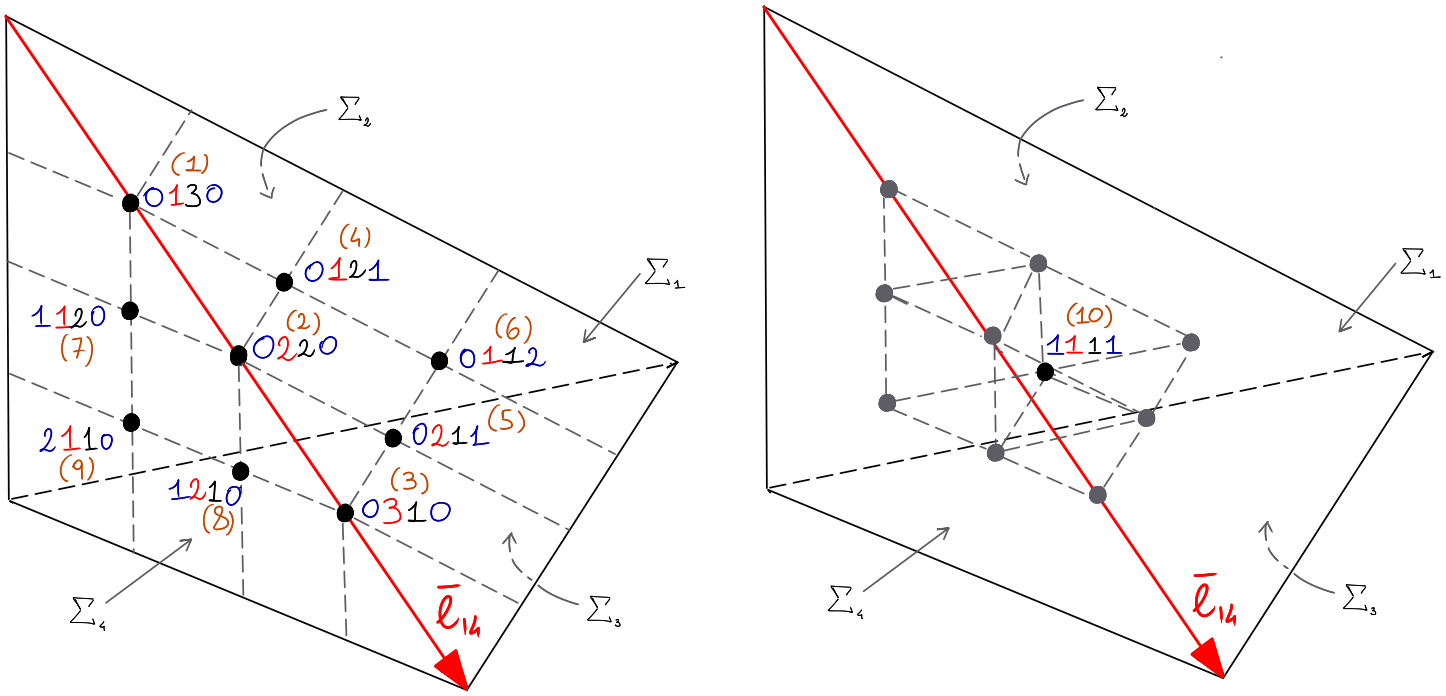
Vector finite elements



Numbering of the DOFs

Each DOF is identified by four indices (i,j,k,l) only three of which are independent.

Index i : iso-plane associated to the 1st face (i=0 means that the DOF belongs to the 1st face).
Index j : iso-plane associated to the 2nd face (j=0 means that the DOF belongs to the 2nd).
Index k : iso-plane associated to the 3rd face (k=0 means that the DOF belongs to the 4rd face).
Index h : iso-plane associated to the 4th face (h=0 means that the DOF belongs to the 4th face).

The DOFs are associated to edges which themselves carry two (independent) indices which are exactly those of the faces that share the edge. This means that the DOFs that are located on outer shell of the element will have at least two indices that will, at some point, have value 0.

Outer (superficial) DOFs are order separately, and with higher priority, from the inner (volumetric) DOFs.

Order of the DOFs

DOFs for the edge (r,s) are sorted by increasing values of the indices couple (r,s) in the (i,j,k,h) quadruple. If two DOFs have the same couple then they are sorted by increasing values of the q-th index (where q=max{s,p}±1).

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