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WHITNEY ELEMENTS ON PYRAMIDS*

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Abstract. Conforming finite elements in $\boldsymbol{H}(\mathrm{div};\Omega)$ and $\boldsymbol{H}(\mathbf{curl};\Omega)$ can be regarded as discrete differential forms (Whitney–forms). The construction of such forms is based on an interpolation idea, which boils down to a simple extension of the differential form to the interior of elements. This flexible approach can accommodate elements of more complicated shapes than merely tetrahedra and bricks. The pyramid serves as an example for the successful application of the construction: New Whitney forms are derived for it and they display all desirable properties of conforming finite elements.

Key words. Whitney elements, edge elements, pyramidal element.

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