Orientation Fields on Closed Surfaces A Discrete Exterior Calculus Primal Dual (DEC-PD) Aproach

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Content

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- vertices, edges,(triangle) faces

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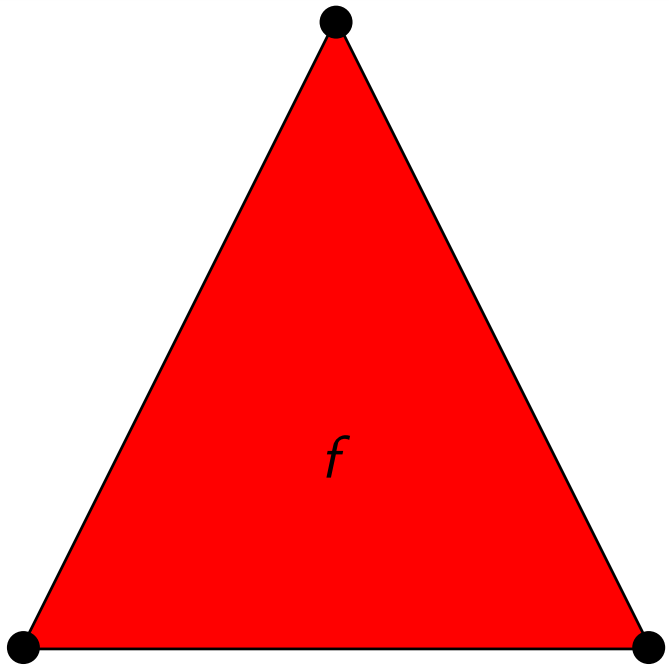
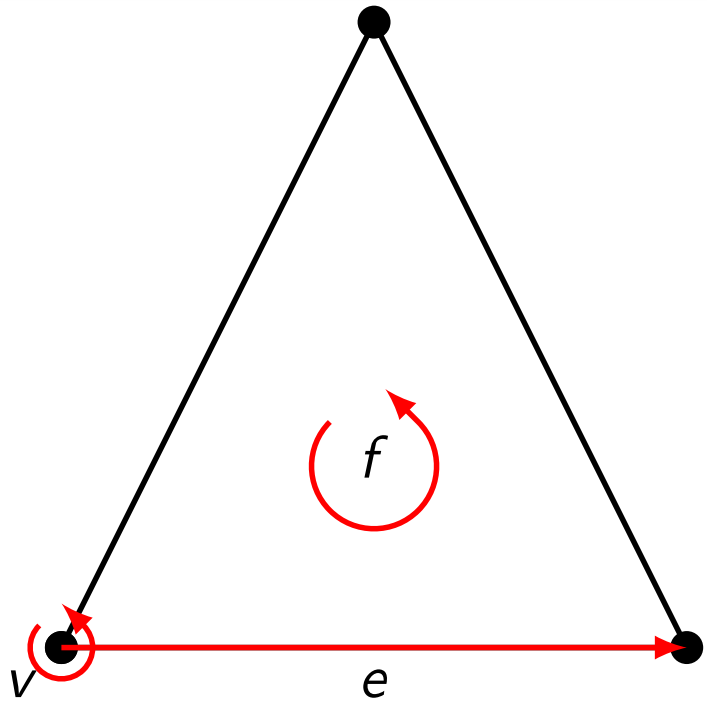


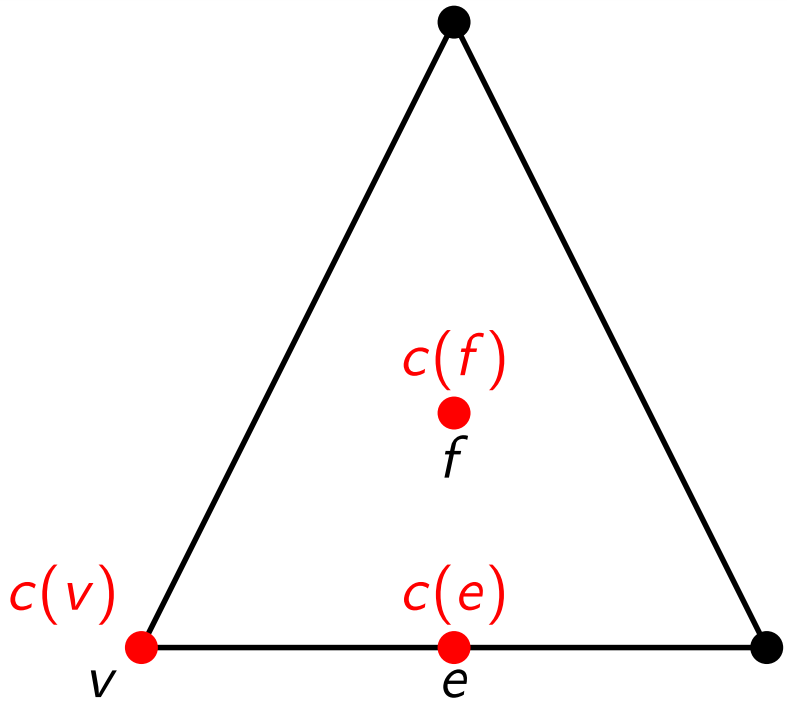
The surface mesh is made of simplices $\sigma = v, e, f$:

- vertices, edges,(triangle) faces
- equipped with an orientation



The surface mesh is made of simplices $\sigma = v, e, f$:

- vertices, edges,(triangle) faces
- equipped with an orientation
- have circumcenters $c(\sigma) \in Int(\sigma) \Rightarrow$: well-centered)



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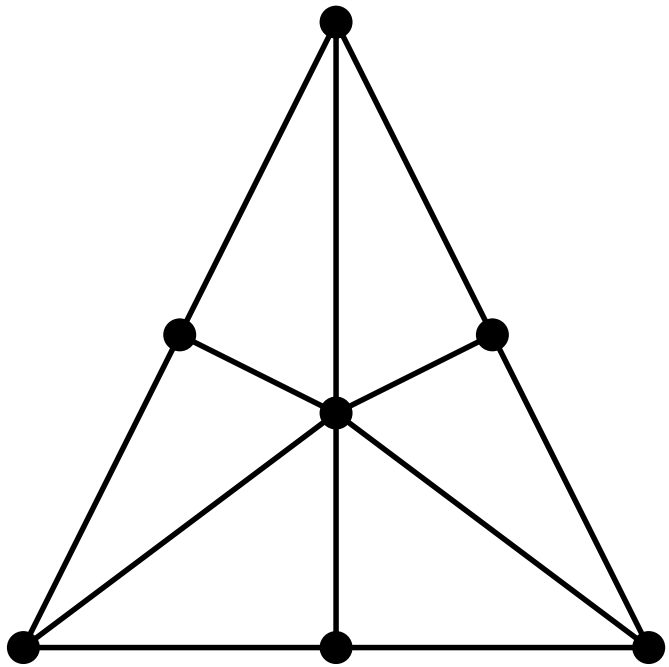
- vertices, edges,(triangle) faces
- equipped with an orientation
- have circumcenters $c(\sigma) \in Int(\sigma) \Rightarrow$: well-centered)
- are refinable (circumcentric subdivision)



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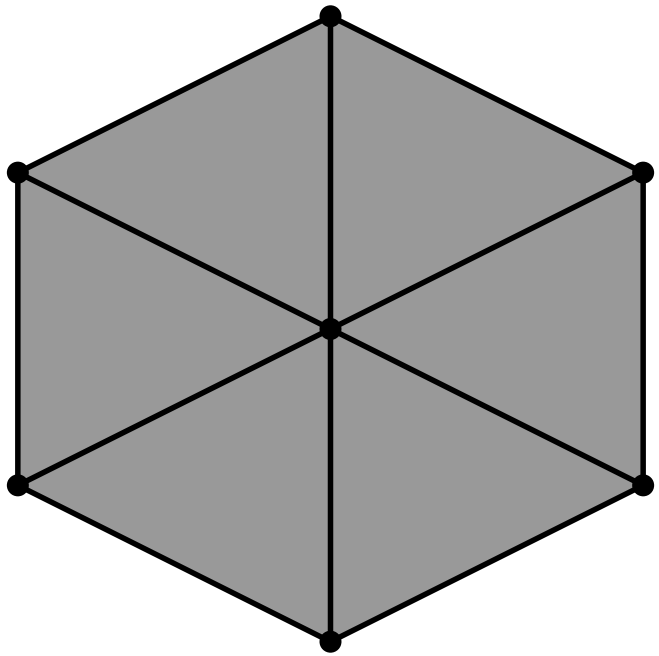

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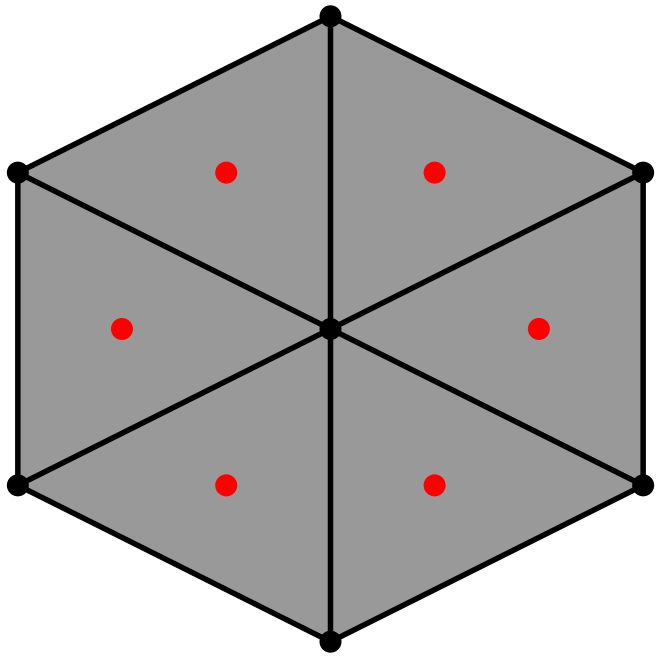

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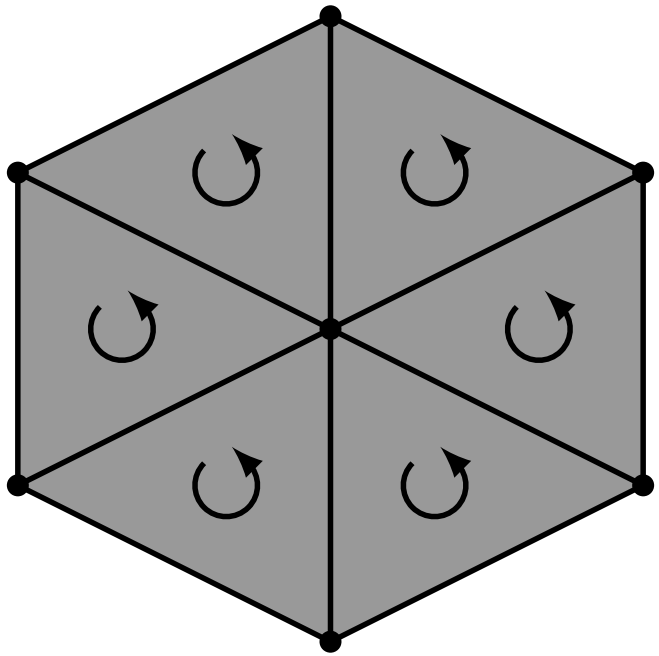

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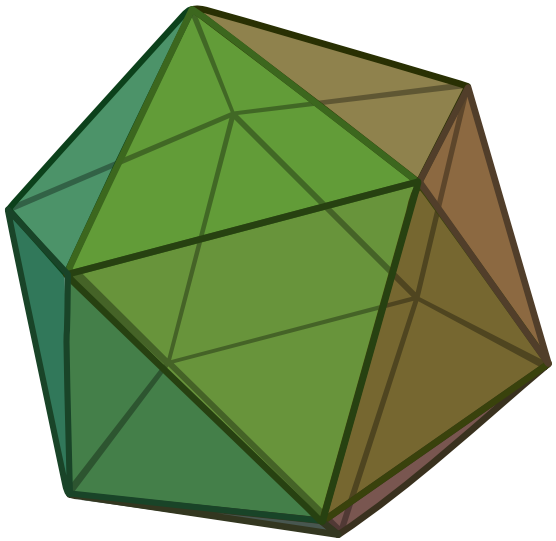
- **manifold-like**: polyhedron $\bigcup_{f \in \mathcal{F}} f$ is a C^0-manifold



https://commons.wikimedia.org/wiki/File:Icosahedron.svg