Subject: Re: mesh_volume and tetra_volume Posted by Karl Schultz on Mon, 09 Aug 2004 16:28:56 GMT

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"Robert Schaefer" <robertschaefer@gmx.de> wrote in message news:bffaee64.0408090124.5906ed23@posting.google.com...

- > Hello, I want to get the volume out of a 3d object.
- > First i tried with mesh_volume, but the returned values weren't
- > similar to my calculated. I checked with mesh_issolid: return value:1,
- > so it ios solid and should return the volume.
- > When i check with tetra_volume the volume is similar to my calculated
- > volume.

>

- > Now my question: what is the difference between mesh_volume and
- > tetra_volume?

MESH_VOLUME works by summing:

(a dot (b cross c)) / 6

for every triangle in the mesh where a, b, and c are the verts of each triangle in the mesh. This effectively calculates the signed volume of a tetrahedron formed by the origin and the 3 triangle verts for each triangle and then adds them up.

TETRA_VOLUME just adds up the volume of all the tets in the mesh using the same idea as above.

How big a difference are you seeing? Is there anything strange about your mesh, like being self-intersecting? How did you generate both the polygonal mesh and the tetrahedral mesh?

Karl

Subject: Re: mesh_volume and tetra_volume
Posted by robertschaefer on Tue, 10 Aug 2004 08:02:33 GMT
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"Karl Schultz" <kschultz_no_spam@rsinc.com> wrote in message news:<10hf9gscqmtdj41@corp.supernews.com>...

- > "Robert Schaefer" <robertschaefer@gmx.de> wrote in message
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> Karl

My testobjekt is generated by dilatation of one point. I can not see any strange about the mesh.

With computemesh i generate the triangles, like D.fanning in his example (http://www.dfanning.com/graphics_tips/mesh.html). I signed the calculated values between tetra_volume and mesh_volume are very differnt:

accord sphere formula: 4./3.*!pi*16.^3 = 17157.3

total (vol) : 17611.0

volume with tetra volume: 16308.0

mesh_volume: 11988.0

Any idea?

Robert