

Re: resolve to perpendicular components, because they are independent

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*Source:* <http://sci.tech-archive.net/Archive/sci.physics/2006-01/msg03071.html>

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- *From:* "Ken S. Tucker" <[dynamics@xxxxxxxxxxxxx](mailto:dynamics@xxxxxxxxxxxxx)>
  - *Date:* 26 Jan 2006 10:38:24 -0800
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Hero.van.Jindelt@xxxxxx wrote:

- > Ken S. Tucker wrote:
- >> Hero.van.Jindelt@xxxxxx wrote:
- >>> Ken S. Tucker wrote about
- >>>>> ....an orthogonal 4D....
- >>> "Can You explain, how a fourth dimension can be orthogonal to the
- >>> three of space, measured in  $\text{cm}^3$ ?,
- >> 3 spatial dimensions and 1 time dimension, is commonly
- > called 4D. An \*orthogonal\* 4D implies 3 orthogonal spatial
- >> axes x,y,z, and 1 time axis perpendicular to x,y,z.
  
- > Ken, again avoiding "body contact", replacing "orthogonal" by
- > "perpendicular".
- > You are thinking too much coordinate-minded, 3D with a point of
- > origin. That's how we all are brought up, years of looking at 2D
- > blackboards, Book-illustrations and monitors. With the monitor came
- > "frames", discret time. Continuous time displayed one has in math only
- > with life teaching: the movement of the hand can be repeated, different
- > from static looking at the trace, it left to blackboard or in

The above meanders much too much for me without focusing on any particular problem.

- > Alexandria-times in the sand.
- > Nowadays i go this way:
- > Going from one point to a different point, gives a point and a
- > direction (1D=2P=two points) {and a distance too}.
- > 3 Points, that is -most often - two directions from one point, the
- > difference of directions is called an angle, an oriented one, if we
- > assign order to the directions (f.e. one principal or
- > reference-direction and - in math standard - a left or clockwise turn
- > to the other direction). And 3 points, that is - most often - a plane
- > too (2D=3P).
- > There are several ways to an right angle.
- > I'm adding a fourth point (each two on a separate line without the
- > other two points). So we have another direction, from the plane to the
- > fourth point, a normal. This normal is perpendicular and orthogonal to

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- > the plane and also to the two directions, as given before.
- > Standard orientation in math is left, but this time left-screw (which
- > can include left-clockwise). Illustrated by a right hand, naming the
- > thumb 1, the pointer 2 and the middle finger 3 –this gives a
- > left-clockwise (left on a plane) orientation. Naming the root of the
- > three fingers in the palm 0, one gets a left screw, going from 0 to 1
- > to 2 to 3. (3D=4P).
- >
- > Now, not to forget about all the 4D-talk, most basic:
- > 0D, a point. (0D=1P) !!
- >
- > In here we all saw lots of 2D pictures of what is named "4D-space" –
- > but that's not what we are talking about. We both talk about a 3D-space
- > and we both can proceed to dynamic geometry: ( 3D, time).But time being
- > "orthogonal" or "perpendicular" to space or something of it ?
- >
- > A three-hours-walk can be a distance (with speed known) and ten minutes
- > is displayed by a finger of the hand of a clock changing direction and
- > the tip moving along a distance of  $\frac{1}{6}$  th of  $2\pi$ \* (length of finger).
- > A coordinate system can display two movements, one – most regular –
- > when one draws the "time"-axis (mostly the x-axis), t being here the
- > independent variable. And when one draws the the graph of a function,
- > the set { ( t, f(t) ) | f .... } as a line. Is this movement or the
- > time in any way "perp"? Consider the traces left, the projection of any
- > point onto the axes gives a point on the t-axis and one on the y-axis.
- > Both axes perp to each other– but that's space, a picture of time, nit
- > time..... and so forth. so
- >>> Please show me "an orthogonal 4D".
- >>
- >> Ok, ...
- > That would be great.
- >> ...maybe you could inform me/us of your background
- >> in math & physics, especially geometry.
- > Look into the PS-attachment below.
- >> A term like
- >> "orthogonal" can be easy to explain but difficult to define.
- >> Ken
- > I put my trust in You.
- > So after Your answer ( and may be a few more posts) at the end, we
- > could ] otagai ni rei [.
- > I hope kenneth.h... is enjoying reading this, and some others too. Any
- > word of You is welcome too.
- > Regards
- > Hero
- > PS
- >> ...maybe you could inform me/us of your background
- >> in math & physics, especially geometry.
- > Actually i'm living in this space and time, i'm talking about. My most
- > prominent teacher was my father, f.e. showing me from a bridge over the
- > railway, how the rails ( proper prolonged) meet at infinity, so the
- > train driver doesn't has to worry, that he can't pass the – so to be

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- > seen – diminishing distance between the two rails. No border – in
- > finis, what a wonderful universe.
- > The other teachers, aside from the persons at the blackboard are the
- > same as Yours, Archimedes, Hamilton – You tell me. In physics i told
- > You already about how far i am with Maxwell – and that's symptomatic
- > for me. For a better picture of what i learned, google
- > sp,sm and de.sci.mathematik for my name.
- > And a photo is displayed at my website
- > <http://liz.de>
- > or, the same:
- > <http://i-is-no-longer-imaginary.gmxhome.de>
- > It's most about my biggest achievement so far: there is no imaginary
- > axis, (even Riemann just talks about the y-axis, link was given) or a
- > complex or Gauss-plane!
- > Actually i'm still hunting for this wo-man, who introduced this
- > notation into math and physics, as s-he psted some deennia of my life.

Perhaps you could make a succinct argument/question,  
I think you'll get more replies.  
Ken

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• *Follow-Ups:*

- ◆ **Re: resolve to perpendicular components, because they are independent**  
◇ From: Hero . van . Jindelt

• *References:*

- ◆ **Re: resolve to perpendicular components, because they are independent**  
◇ From: mmeron
- ◆ **Re: resolve to perpendicular components, because they are independent**  
◇ From: Ken S. Tucker
- ◆ **Re: resolve to perpendicular components, because they are independent**  
◇ From: Timo Nieminen
- ◆ **Re: resolve to perpendicular components, because they are independent**  
◇ From: Ken S. Tucker
- ◆ **Re: resolve to perpendicular components, because they are independent**  
◇ From: FrediFizzx
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- Prev by Date: ***Re: What creates the Charge?***
- Next by Date: ***Re: Is time dilation real?***
- Previous by thread: ***Re: resolve to perpendicular components, because they are independent***
- Next by thread: ***Re: resolve to perpendicular components, because they are independent***
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