

Re: Treating Magnitude as Fundamental

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lwal...wrote:

What about P4? When Tim first posted about the polysigned numbers here at this newsgroup years ago, it was Robin Chapman who pointed out that P4 is isomorphic to $R \times C$. Mr. Chapman proved this by using the following isomorphism:

-1 becomes $(-1, i)$
+1 becomes $(1, -1)$
*1 becomes $(-1, -i)$
#1 becomes $(1, 1)$

and then use componentwise multiplication in the ring $R \times C$.

I did know this one, it's nice to know. The four points $(-1, +1, *1$ and $\#1)$ form a tetraeder in 3D. So You have 1D redundancy. This makes it interesting for calculations, it's a kind of error-correction (Think of gyro-platforms). And one has only positive numbers (and zero) – another safety. (when one treats them as ordered four-tuples).

Thus unlike P2 and P3, P4 is not a field since $(-1+1)(-1*1)$ equals $-1+1*1\#1$ which is zero. Indeed, it's easy to show that Pn is never a field if n is composite.

There are not so many fields possible.
(NB:Tim never claimed this to be a field)

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Still, it is a nice multiplication to investigate.
And he gave some beautiful pictures from iterations too.

So, i like Your encouragement of Tim.

With friendly greetings
Hero

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