
Subject: Re: VECTOR_FIELD trouble

Posted by [James Kuyper](#) on Tue, 22 Aug 2006 17:28:29 GMT

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Jo Klein wrote:

```
> Dear IDL wizards,
> Has anyone got experience with the use of VECTOR_FIELD? The data I have
> is quite simple: It's a volume of vectors, where for each spatial
> position of a 3D regular grid I've got x, y and z as the projections of
> a unit-length vector centred on those grid locations. It's volume data
> from diffusion tensor MRI, and the vectors describe apparent diffusion
> directions at any given point in the object studied (a brain, in this
> case). So, to visualise the vectors, I browsed the docs and thought
> VECTOR_FIELD should do the job, but I can't figure out how to use it.
> One slice extracted from the data looks like this (z dimension of the
> vectors dropped):
> IDL> help,myslice
> MYSLICE      FLOAT    = Array[2, 128, 104]
> IDL> print,myslice[*,60:62,50]
>   -0.393992   0.305778
>   -0.353878   0.368543
>   -0.505301   0.394556
> I set up my vectors like this:
> IDL> vector_field,myslice,outverts,outconn
> IDL> plots,outverts
> .. and the result is a window with just a wobbly looking vertical line,
> instead of lots of little vectors on a rectangular region.
> IDL> print,outverts[*,10000:10002]
>    8.00000    39.0000
>    8.00000    39.0000
>    9.00000    39.0000
>
> I suppose I'm misinterpreting how IDL would like my input data to be
> formatted, but as there are no examples in the VECTOR_FIELD docs, I'm a
> bit at a loss here.
> I'd appreciate any help you can give.
> Thanks a lot everyone,
```

What's probably happening here is that some of the vectors you're displaying are much longer than the spacing between the elements of your array, probably in the vertical direction. For example, I put together a test case as follows:

```
IDL> x = indgen(20)#replicate(1,30)
IDL> y = replicate(1,20)#indgen(30)
IDL> field = fltarr(2,20,30)
IDL> field[0,*,*] = (x+y)*(x-y)
IDL> field[1,*,*] = (x*x+y*y)
```

```
IDL> VECTOR_FIELD,field,outverts,outconn  
% Compiled module: VECTOR_FIELD.  
IDL> plots,outverts[0,*],outverts[1,*],psym=3
```

The results looked pretty wierd. However, if you restrict the range, it gets clearer:

```
IDL> plot,outverts[0,*],outverts[1,*],psym=3,xrange=[-10,40]
```

The problem was the following:

```
IDL> print,max(field),min(field)  
361.000 -841.000
```

The solution is scale the vectors to make them fit between the grid points:

```
IDL> VECTOR_FIELD,field,outverts,outconn,SCALE=0.0005  
IDL> plot,outverts[0,*],outverts[1,*],psym=3
```
