
Subject: Re: 3D Vector Field Plot?

Posted by [marc schellens\[1\]](#) on Tue, 30 May 2000 07:00:00 GMT

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John Boccio wrote:

>
> Hi,
>
> Is there any straightforward way to plot
> directed arrows representing a vector field
> in 3 dimensions?
>
> Anyone have a sample code for direct graphics?
> using IDLgrpolyline?
>
> Thanks,
>
> John Boccio
> boccio@swarthmore.edu

Here is a small sample function I extracted from one of my programs.

I simplified it and did not test it, but I think you can get the idea.

The 'trick' is that the top of the vectors consist of two more
IDLGrPolyline

objects which are thicker than the rest of the vector to fake an arrow.

Another thicker part is drawn at the actual position of the vector
(the middle of the vector line here).

With this you save the need to calculate the projection for the vector
top.

I think therefore this gives not the nicest vectors, but it should be
quite fast.

Just add the returned objarr to a IDLGrModel.

Hope this is helpful.

:-) marc

```
;; ---
```

```
;; vectorPosition, vectorDirection: [3,numVectors] float arrays
```

```
;; colorArray: [3,numVectors] byte array for color of each vector
```

```
function sample,vectorPosition,vectorDirection,colorArray
```

```
vectorObj=objarr(4)
```

```
line1=[[vectorPosition[*,*]-vectorDirection[*,*]],  
        [vectorPosition[*,*]+vectorDirection[*,*]]]
```

```
linkList=intarr(3,numPlot)
```

```
linkList[0,*]=2
```

```

linkList[1,*]=indgen(numPlot)
linkList[2,*]=indgen(numPlot)+numPlot

;; if we do not do this, polyline thinks we are using colortable
if numVectors eq 1 then vertColors=[[vertColors],[vertColors]]

line2=[[vectorPosition[*,*]+vectorDirection[*,*]*0.7],[vectorPosition[*,*]+vectorDirection[*,*]*.8]]
line3=[[vectorPosition[*,*]+vectorDirection[*,*]*0.8],[vectorPosition[*,*]+vectorDirection[*,*]*.9]]
line4=[[vectorPosition[*,*]-vectorDirection[*,*]*0.05],[vectorPosition[*,*]+vectorDirection[*,*]*.05]]

vectorObj[0]=obj_new('IDLgrPolyline',$
    line1,$
    POLYLINES=linkList,$
    VERT_COLORS=vertColors,$
    THICK=arrowThickness,$
    COLOR=colorArray)

vectorObj[1]=obj_new('IDLgrPolyline',$
    line2,$
    POLYLINES=linkList,$
    VERT_COLORS=vertColors,$
    THICK=arrowThickness*4,$
    COLOR=colorArray)

vectorObj[2]=obj_new('IDLgrPolyline',$
    line3,$
    POLYLINES=linkList,$
    VERT_COLORS=vertColors,$
    THICK=arrowThickness*2,$
    COLOR=colorArray)

vectorObj[3]=obj_new('IDLgrPolyline',$
    line4,$
    POLYLINES=linkList,$
    VERT_COLORS=vertColors,$
    THICK=arrowThickness*2,$
    COLOR=colorArray)

return,vectorObj
end

```
