Subject: plotting a vector field in 3d
Posted by Petros Syntelis on Fri, 21 Jun 2013 10:14:12 GMT
View Forum Message <> Reply to Message

Hi,

I am trying to plot a vector field in 3d and i have great difficulty in doing so.
I have 3 variable, bx,by,bz that have (nx,ny,nz) dimentions which represent the vector field.

My questions are:
1) How can i plot this vector field. I have tryied a variety of things (flow3 etc) i found online but all advices seems to lack some part of information and i fail to reproduce the results.
I also whould like a hint on how i could overplot those lines above an xy image on the bottom of the plot.

2) Is there a way to trace the field lines and have, lets say 3 variables of dimentions (nlines,nx),(nlines,ny),(nlines,nz)?

3) Because i am pretty sure that no answer whould be sufficient explanatory, as you can't explain everything in a group discussion, which book/references whould you recommend me to read?

Thank you very much,
Petros

Subject: Re: plotting a vector field in 3d
Posted by Michael Galloy on Fri, 21 Jun 2013 16:01:29 GMT
View Forum Message <> Reply to Message

On 6/21/13 4:14 am, Petros Syntelis wrote:
> Hi,
>
> I am trying to plot a vector field in 3d and i have great difficulty
> in doing so. I have 3 variable, bx,by,bz that have (nx,ny,nz)
> dimentions which represent the vector field.
>
> My questions are: 1) How can i plot this vector field. I have tryied
> a variety of things (flow3 etc) i found online but all advices seems
> to lack some part of information and i fail to reproduce the
> results. I also whould like a hint on how i could overplot those
> lines above an xy image on the bottom of the plot.
>
> 2) Is there a way to trace the field lines and have, lets say 3
> variables of dimentions (nlines,nx),(nlines,ny),(nlines,nz)?
>
> 3) Because i am pretty sure that no answer whould be sufficient
> explanatory, as you can't explain everything in a group discussion,
> which book/references whould you recommend me to read?

>
> Thank you very much, Petros
>

Check out this post:

http://michaelgalloy.com/2008/03/19/overview-of-flow-visuali zation-in-idl.html

Mike
--
Michael Galloy
www.michaelgalloy.com
Modern IDL: A Guide to IDL Programming (http://modernidl.idldev.com)
Research Mathematician
Tech-X Corporation

Subject: Re: plotting a vector field in 3d
Posted by Michael Galloy on Fri, 21 Jun 2013 16:30:47 GMT
View Forum Message <> Reply to Message

On 6/21/13 10:01 AM, Michael Galloy wrote:
> On 6/21/13 4:14 am, Petros Syntelis wrote:
>> Hi,
>>
>> I am trying to plot a vector field in 3d and i have great difficulty
>> in doing so. I have 3 variable, bx,by,bz that have (nx,ny,nz)
>> dimentions which represent the vector field.
>>
>> My questions are: 1) How can i plot this vector field. I have tryied
>> a variety of things (flow3 etc) i found online but all advices seems
>> to lack some part of information and i fail to reproduce the
>> results. I also whould like a hint on how i could overplot those
>> lines above an xy image on the bottom of the plot.
>>
>> 2) Is there a way to trace the field lines and have, lets say 3
>> variables of dimentions (nlines,nx),(nlines,ny),(nlines,nz)?
>>
>> 3) Because i am pretty sure that no answer whould be sufficient
>> explanatory, as you can't explain everything in a group discussion,
>> which book/references whould you recommend me to read?
>>
>> Thank you very much, Petros
>>
>
> Check out this post:
>

>
> http://michaelgalloy.com/2008/03/19/overview-of-flow-visuali zation-in-idl.html
>
>
> Mike

The article is very 2D-centric, but there are a few 3-dimensional
examples. I don't think there are very many good options for
3-dimensional (or 2-dimensional, for that matter) vector field
visualization in IDL.

Mike
--
Michael Galloy
www.michaelgalloy.com
Modern IDL: A Guide to IDL Programming (http://modernidl.idldev.com)
Research Mathematician
Tech-X Corporation

Subject: Re: plotting a vector field in 3d
Posted by David Fanning on Fri, 21 Jun 2013 16:34:23 GMT
View Forum Message <> Reply to Message

Michael Galloy writes:

> Check out this post:
>
> http://michaelgalloy.com/2008/03/19/overview-of-flow-visuali zation-in-idl.html

I agree the Flow3 example in the documentation sucks (sigh...), but it's
pretty easy to put axes around the flow:

```
vx = RANDOMU(seed, 5, 5, 5)
vy = RANDOMU(seed, 5, 5, 5)
vz = RANDOMU(seed, 5, 5, 5)

; Set up the 3D scaling system:
cgSurf, dist(30), xr=[-1,5], yr=[-1,5], zr = [-1,5], $
   /nodata, xst=1, yst=1

; Plot the vector field:
!P.Color=cgColor('black')
FLOW3, vx, vy, vz
```

Now that I look at it, Flow3 sucks, too. :-)

There is probably a good Ph.D. thesis in here for someone who wants to

develop some useable software.

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting a vector field in 3d
Posted by manodeep@gmail.com on Mon, 24 Jun 2013 01:23:16 GMT
View Forum Message <> Reply to Message

Some of the most stunning flow renderings I have seen come are here:

http://skysrv.pha.jhu.edu/~miguel/videos.html

In particular, I would love to know how to re-create "Interactive visualization of the Cosmic Web" video (even if without the interactive part). Any ideas? If I remember correctly, that video was made with LIC that Mike wrote about in his vector flow plot.

And apologies to Petros for not having a solution and posting (hopefully) a teaser.

Cheers,
Manodeep

On Friday, June 21, 2013 11:34:23 AM UTC-5, David Fanning wrote:
> Michael Galloy writes:
>
>
>
>> Check out this post:
>
>>
>
>> http://michaelgalloy.com/2008/03/19/overview-of-flow-visuali zation-in-idl.html
>
>
>
> I agree the Flow3 example in the documentation sucks (sigh...), but it's
>
> pretty easy to put axes around the flow:

>
>
>
> vx = RANDOMU(seed, 5, 5, 5)
>
> vy = RANDOMU(seed, 5, 5, 5)
>
> vz = RANDOMU(seed, 5, 5, 5)
>
>
>
> ; Set up the 3D scaling system:
>
> cgSurf, dist(30), xr=[-1,5], yr=[-1,5], zr = [-1,5], $
>
> /nodata, xst=1, yst=1
>
>
>
> ; Plot the vector field:
>
> !P.Color=cgColor('black')
>
> FLOW3, vx, vy, vz
>
>
>
> Now that I look at it, Flow3 sucks, too. :-)
>
>
>
> There is probably a good Ph.D. thesis in here for someone who wants to
>
> develop some useable software.
>
>
>
> Cheers,
>
>
>
> David
>
>
>
> --
>
> David Fanning, Ph.D.

>
> Fanning Software Consulting, Inc.
>
> Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
>
> Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting a vector field in 3d
Posted by Petros Syntelis on Wed, 26 Jun 2013 09:02:15 GMT
View Forum Message <> Reply to Message

On Friday, June 21, 2013 1:14:12 PM UTC+3, Petros Syntelis wrote:
> Hi,
>
>
>
> I am trying to plot a vector field in 3d and i have great difficulty in doing so.
>
> I have 3 variable, bx,by,bz that have (nx,ny,nz) dimentions which represent the vector field.
>
>
>
> My questions are:
>
> 1) How can i plot this vector field. I have tryied a variety of things (flow3 etc) i found online but all advices seems to lack some part of information and i fail to reproduce the results.
>
> I also whould like a hint on how i could overplot those lines above an xy image on the bottom of the plot.
>
>
>
> 2) Is there a way to trace the field lines and have, lets say 3 variables of dimentions (nlines,nx),(nlines,ny),(nlines,nz)?
>
>
>
> 3) Because i am pretty sure that no answer whould be sufficient explanatory, as you can't explain everything in a group discussion, which book/references whould you recommend me to read?
>
>
>
> Thank you very much,
>
> Petros

I really thank you all for your answers! After reading Mike's article i got a little bit disappointed from the examples that use IDL routines.
But this paper you had on different techniques might prove to be usefull!

Thanks again,
Petros

Subject: Re: plotting a vector field in 3d
Posted by Krishnapriya M on Mon, 05 May 2014 04:46:58 GMT
View Forum Message <> Reply to Message

On Friday, June 21, 2013 9:31:29 PM UTC+5:30, Mike Galloy wrote:
> On 6/21/13 4:14 am, Petros Syntelis wrote:
>
>> Hi,
>
>>
>
>> I am trying to plot a vector field in 3d and i have great difficulty
>
>> in doing so. I have 3 variable, bx,by,bz that have (nx,ny,nz)
>
>> dimentions which represent the vector field.
>
>>
>
>> My questions are: 1) How can i plot this vector field. I have tryied
>
>> a variety of things (flow3 etc) i found online but all advices seems
>
>> to lack some part of information and i fail to reproduce the
>
>> results. I also whould like a hint on how i could overplot those
>
>> lines above an xy image on the bottom of the plot.
>
>>
>
>> 2) Is there a way to trace the field lines and have, lets say 3
>
>> variables of dimentions (nlines,nx),(nlines,ny),(nlines,nz)?
>
>>
>
>> 3) Because i am pretty sure that no answer whould be sufficient
>
>> explanatory, as you can't explain everything in a group discussion,

>
>> which book/references whould you recommend me to read?
>
>>
>
>> Thank you very much, Petros
>
>>
>
>
>
> Check out this post:
>
>
>
>
>
>
> http://michaelgalloy.com/2008/03/19/overview-of-flow-visuali zation-in-idl.html
>
>
>
> Mike
>
> --
>
> Michael Galloy
>
> www.michaelgalloy.com
>
> Modern IDL: A Guide to IDL Programming (http://modernidl.idldev.com)
>
> Research Mathematician
>
> Tech-X Corporation

Hi,
I'm trying to plot a 2D vector plot(lon v/s Depth) using IDL..... but I don't know the exact syntax... please help me to resolve this.....

Krishnapriya M
NIO, Goa

Subject: Re: plotting a vector field in 3d
Posted by David Fanning on Mon, 05 May 2014 12:12:42 GMT
View Forum Message <> Reply to Message

Krishnapriya M writes:

> I'm trying to plot a 2D vector plot(lon v/s Depth) using IDL..... but I don't know the exact syntax... please help me to resolve this.....

IDL> cgDrawVectors, x_vec_component, y_vec_component, $
x_position_of_vector, y_position_of_vector

Documentation here:

http://www.idlcoyote.com/idldoc/cg/cgdrawvectors.html

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")
