
Subject: Re: Gradient of two dimensional field
Posted by [stockwell](#) on Wed, 19 Feb 1997 08:00:00 GMT
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In article <yckohdg23jj.fsf@hmi.de> Wilpert_Martin <wilpert-m@hmi.de> writes:

> From: Wilpert_Martin <wilpert-m@hmi.de>
> Subject: Gradient of two dimensional field
> Date: 19 Feb 1997 16:56:00 +0100

> Hi everybody,
> we want to determine the electrical field from a given potential,
> i.e. we have to calculate the gradient of a two dimensional array.
> Has anybody a idl-pvwave procedure to do this task?
> Thank you in advance
> Martin Wilpert

The gradient is just $(d/dx, d/dy)f(x,y)$
so you can take the deriv() function on the rows and then the columns
"The DERIV function performs numerical differentiation using 3-point,
Lagrangian interpolation and returns the derivative."

so do this:

```
.....  
;; array holds your potential function of size (len,len)  
dx = fltarr(len,len)  
dy = fltarr(len,len)  
; my apologies for the for loop  
for i = 0,len-1 do dx(*,i) = deriv(array(0:len-1,i))  
for i = 0,len-1 do dy(i,*) = deriv(phase(i,0:len-1))  
endfor  
vel,dx,dy  
end  
.....
```

dx holds the x component of the gradient
dy holds the y component of the gradient

cheers,
bob

R. G. Stockwell | Space and Atmospheric Research Group
Phone: 519-679-2111 X6411 | University of Western Ontario
Fax: 519-661-3129 | London, Ontario, Canada

email: stockwell@uwo.ca

WWW: http://www.sar.physics.uwo.ca/~stockwell/time_series.html

" If I have not seen as far as other men, it's
because giants were standing on my shoulders"

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