Subject: Re: How to calculate the abscissa values for the given vertical values
Posted by Jean H. on Mon, 05 Oct 2009 16:26:50 GMT
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duxiyu@gmail.com wrote:
> Y is a time series and X is the sampling time.
> Both X and Y are discrete.
> I don't know the analytical form of the relation bewteen X and Y.
>
> To get the vertical value NY for a given time NX, I can use 'NY =
> interpol(Y, X NX)'.
> Similarly, I want to get the correspondent time CX for a fixed
> vertical value CY.
> But the values of correspondent time are not unique. CX should be not
> a scalar but an array.
> So I cannot use 'CX = interpol(X, Y, CY)' to get these values.

You may do it by hand...

```
x = findgen(1000)/1000*4*pi
y = cos(x)

Ytarget = 0


;Find the 2 consecutive points that are > and < of the Y threshold value
;(don't forget to deal where a point = the value)

Xidx = where((y gt Ytarget and shift(y,1) lt Ytarget) or (y lt Ytarget
and shift(y,1) gt Ytarget), count)
```

then you can do a linear interpolation to find Xsolution

```
;y = ax+b
a = (y[xIdx] - y[xIdx+1]) / (x[xIdx] - x[xIdx+1])
b = y[xIdx]-a*x[xIdx]
Xsolution = (yTarget - b)/a
```

Jean