
Subject: Re: A better way to find a dip (local minimum with certain conditions)

Posted by [DavidPS](#) on Mon, 21 Dec 2009 18:44:33 GMT

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Thanks to all!! I've seen all your suggestions and you have me pointed me through the way I wanted.
Finally, what I've got from Jim P and James version and adding stuff here and there is:

```
===== CODE=====
FUNCTION finddip5,array,minim=minim,range=range

range=KEYWORD_SET(range) ? 1>range<(n_elements(array)/2-1) : 4

; Find the negative gradients. We're only interested in the sign of
the gradient, not the magnitude.
c1 = fix(convol(array, [-1, 1]) GT 0)

; Find the positive gradients, and invert the sign.
c2 = -fix(convol(array, [1, -1]) GT 0)

; Combine the two Filter for four negative gradients, a zero, and
four positive gradients.
minima = where(fix(convol(c1+c2, [replicate(-1,range+1),replicate
(1,range)]) eq 2*range+1))

;Look for those greater than minim if set.
IF (minima[0] NE -1) AND (KEYWORD_SET(minim)) THEN BEGIN
  lab = where(array[minima] ge minim,nlab)
  minima=(nlab GT 0) ? minima[lab] : -1
ENDIF
RETURN,minima
END
===== END CODE=====
```

Which is very clever, scalable and a lot faster than what I had.
However... I still have a small problem, which I've been trying to solve using the same method... but I have not found the way to do it.

In my first example I was interested also on those dips where on the decreasing or increasing part of it there's repeated values. For example consider these arrays:

`[-5,-4,18,12,12,3,1,-0.5,7,11,13,30,29,5]` or

`[-5,-4,18,16,12,3,1,-0.5,7,11,11,30,29,5]`

or a mix of both:

`[-5,-4,18,12,12,3,1,-0.5,7,11,11,30,29,5]`

I've managed to get when there's on one side or another of the dip,

but not in both... making ones in C1 and C1 everything bigger than
-0.0001 and then making 1 the values gt 2 on c1+c2.
does someone have any clue?

Thank you to everybody again!!

David
