Subject: Re: REGRESS and sky background
Posted by Gray on Tue, 06 Jul 2010 19:49:50 GMT
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On Jul 6, 9:19 am, Jeremy Bailin <astroco...@gmail.com> wrote:
> On Jul 5, 8:06 pm, Gray <grayliketheco...@gmail.com> wrote:
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>
>> Hi all,
>
>> I'm baffled with how one of my programs is acting, and would love some
>> insight, if there is any to be had.
>
>> The routine is designed to fit the sky background image (in my case, a
>> 128x128 subdivision of a larger astronomical image) to a plane (Ax+By
>> +C) using REGRESS. My subdivisions are small enough that I think a
>> plane is a pretty good approximation; the idea is to do a 3.5-sigma
>> mean clip to remove sources, then regress the sky pixels to a plane
>> and subtract the plane, and iterate until the fitted plane reaches 0.
>> The problem is that it seems the slope of the background increases
>> with increasing iterations, which it theoretically should not do.
>
>> Here's my general algorithm; I actually use a different mean clipping
>> routine, but astrolib's MEANCLIP gives the same (unwanted) results.
>> Take a look and tell me what you think. Thanks!
>
>> --Gray
>
>> FUNCTION find_skybg, image, sigma
>> img = image
>> s = size(img,/dim)
>> lx = rebin(indgen(s[0]),s[0],s[1]) ;x and y coordinates
>> ly = rebin(indgen(1,s[1]),s[0],s[1]) ;to construct bg plane
>> abc = fltarr(3)
>> iter = 0
>> repeat begin
>> meanclip, img, m, subs=clips, clipsig=3.5 ;don't care about mean,
>> just clips
>> xy = array_indices(s,clips,/dim)
>> ab = reform(regress(xy,img[clips],const=c))
>> sigma = stddev(img[clips])
>> abc += [ab,c]
>> bg = ab[0]*lx+ab[1]*ly+c
>> img -= bg
>> iter++

>>   endrep until (iter ge 10 or total([ab,c]/abc le 0.02) eq 3)
>>   background = abc[0]*lx+abc[1]*ly+abc[2]
>>   return, background
>> endfor
>
> Not sure... I just tested it out on an image with stars and a
> background gradient and it worked exactly as expected. What fraction
> of the image is making it through the sigma clipping? I could see it
> being unstable if that fraction is sufficiently small. Is that
> fraction reasonably stable from iteration to iteration? Maybe there
> are an unusual number of pixels right around 3.5sigma, whose inclusion
> or exclusion makes a big change to the solution?
>
> -Jeremy.

Most of the points, usually around 85%. I've tried varying the clip
sigma, and it doesn't seem to matter...
