Subject: Re: PSF Energy inside circle
Posted by maye on Wed, 30 Jul 2008 22:06:04 GMT
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On Jul 23, 9:17 pm, "Kenneth P. Bowman" <k-bow...@null.edu> wrote:
> In article
> < 8d5ea067-169e-4967-b3d9-29c2e14cf...@f63g2000hsf.googlegroup s.com >,
> Michael Aye <kmichael....@googlemail.com> wrote:
>
>
>
>> Dear all,
>> as so often I am either too blind to find existing stuff or puzzled
>> (if non-existing), that nobody did before what looks like a very usual
>> task.
>> What I want to know:
>> Where in an image array (usual 2d-array with values, e.g. a CCD image)
>> containing a centered 2d-gaussian light pulse lies the circle that
>> contains 80 % (for example) of the "energy" of all the light on the
>> image? I even only need it for the ideal situation where the center of
>> the CCD aligns with the center of the 2d-gaussian light distribution.
>> What I did so far:
>> - Collected useful procedures like psf_gaussian, dist_circle and
>> tvcircle.
>> - Found the algorithm how to integrate from the center pixel towards
>> outside, summing up the frame of pixels next to the previous frame. So
>> my cumulative sum contains the sum of the date of 1, 9, 25 ... pixels.
>
>> But I would like to go in circles, not squares! :)
>> So how could I find and integrate the next "ring" of pixels? How would
>> I even calculate the ever growing circumference correctly, taking into
>> account that I have to sum up ever more pixels?
>> Sounds like a horrible coding work and I am hoping somebody did all
>> that already, because somehow that is something one would need to see
>> how good an optical PSF is, or not?
>
>> As usual, I am grateful for any help or hint to literature, procedures
>> or calibration data of other experiments that might have done the
>> same.
>> Best regards,
>> Michael
>
> Compute the x and y coordinates of each pixel.
>
> x = REBIN(FINDGEN(nx), nx, ny)
> y = REBIN(REFORM(FINDGEN(ny), 1, ny), nx, ny)
>
> You might want to add 0.5 to locate the pixel centers.

>
> Compute the distance from each pixel to the central pixel
>
> d = SQRT((x - x0)^2 + (y - y0)^2)
>
> Then find rings like this
>
> i = WHERE((d GE d1) AND (d LE d2), count)
>
> Do what you want with those pixels.
>
> You can put the WHERE statement in a loop and increment
> d1 and d2 over whatever values you want.
>
I tried your method, it works fine, thanks!
A side question:
For a 1D Gaussian, 68 % of events/energy/.. lies insides 1 sigma, how is this number for a 2D Gaussian? I have a hard time to find statistical tables for 2D Gaussians? And is it possible to get that number analytically?
Best regards,
Michael
