Subject: Re: convolve mystery
Posted by   on Wed, 06 Nov 2013 20:00:21 GMT
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On 2013-11-06 17:54, wlandsman wrote:
> CONVOLVE() is user-written procedure in the IDL Astronomy Library.   The version you are looking at is quite old -- the current version is in
>
> http://idlastro.gsfc.nasa.gov/ftp/pro/image/convolve.pro
>
> The documentation for the current version says that "the image is padded with zeros so that a large PSF does not overlap one edge of the image with the opposite edge of the image."   So I'd say that CONVOLVE is giving the right answer -- or closer to what one would get with a true convolution.   It also matches CONVOLVE_FFT() without the /NO_PADDING keyword.

OK, so there is padding. I'm not sure zero padding is what you want to
do as a default. For people who don't know when they should pad and/or
apodize an image it is probably better to pad with the values in the
outermost pixels of the image in each direction. If the image has a
bias, zero padding will cause a discontinuity that wasn't there in the
input. And if the image has a gradient, you need to pad with different
values left and right (or up and down, depending on the direction of the
gradient).

In my case, I was working with simulated images of the solar limb,
taking care to "pad" the image myself in the sense that I had enough
empty space on one side and enough solar disk on the other, for the
wrap-around not to influence the area next to the limb that I'm
interested in. So no biggie, I was just surprised that I didn't get
symmetric artifacts.

> P.S. Is it possible that you are using a newer version of CONVOLVE, and not the version on the Web page?

Probably, I just thought the one at washington.edu was current. That
site often appears near the top when I google for idl programs. Not that
that proves anything...

Thanks!