
Subject: Re: flux-conserving image resampling?

Posted by [Bringfried Stecklum](#) on Fri, 24 Feb 2006 09:03:13 GMT

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Marshall Perrin wrote:

> Bringfried Stecklum <stecklum@tls-tautenburg.de> wrote:
>
>> I did not check how well it preserves the flux. In any case, you can
>> force the total flux of the output image to be the same as that of the
>> input image.
>
>
> As Henry points out, this isn't really sufficient to ensure that the
> original flux stays in the right parts of the final image. That's important
> for my particular application, which is a dual-beam differential polarimeter.
> I'm trying to take a very precise difference between two images of
> the same star taken simultaneously on different parts of the detector,
> and thus merely enforcing total flux conservation lets light slop between
> the two stellar images (and the background too). Yes, it's a small effect,
> but I'm trying to -measure- a fairly small difference in the first place and
> thus care about this.
>
> - Marshall

Ah, I see your point. I guess what has to be done is to account for the difference in pixel size between the original and the corrected image. The code I've written only does resampling on a grid which represents the pixel location of the undistorted image. In order to preserve the flux locally, one has to keep in mind that depending on the distortion one pixel of the corrected image will subtend an area of less or more than one pixel in the original image. Well, I'm not talking about sub-pixels here (we had this earlier in the group...). For instance in the simple case of a Wollaston which has slightly different image scales for the O and E beams, the ratio of those scales should be applied after one image has been registered to the other. In some sense this photometric correction can be considered as distortion flatfield.

- Bringfried
