Subject: Radon forward projection problem
Posted by Wox on Tue, 22 Apr 2008 15:07:48 GMT

Hi All,

I'm trying to implement an alternative for the FBP(filtered backprojection) method for reconstructing objects measured in tomography experiments. It's supposed to give less noisy tomograms.

Anyway, it's called OSEM and it's some iterative procedure using forward and backward projection until the real sinogram and the calculated sinogram are close.

For the projection, I use IDL's radon function. But I noticed something strange with the forward projection. Try the code below. It calculates the sinogram of a tomogram which is an image with all pixels equal to 1. If you look at the result, something strange is going on in the corners of the sinogram image. Does anyone know what causes it and whether it is an intrinsic radon transform problem?

I would like to get rid of it, because this "estsinogram" is calculated in each iteration of the OSEM (only in the first iteration on an image with 1's) and used to normalize the measured sinogram before adapting the tomogram. The resulting tomogram has some artifacts because of it.

Thanks in advance,

Wout


```
pro test
; Detector
N=80
projcen=(N-1)/2.

; Angles
anglestart=0.
anglerange=180.
NAngles=anglerange/2.

angleinc=anglerange/(NAngles-1)
angles=anglestart+angleinc*findgen(NAngles)
angles*=!pi/180

; Reconstructing an object with 1's
```

```
tomogram=replicate(1.,N,N)
 estsinogram=radon(tomogram,theta=angles,xmin=-projcen,RMIN=-
projcen,drho=1,NRHO=N,/LINEAR)

loadct,0
window
tvscl,not bytscl(rebin(estsinogram,NAngles*3,N*3,/sample))
end
```