Subject: Re: IDL 5.5, 2D FFT indexing confusion.
Posted by Pitufa on Tue, 19 Jul 2005 16:44:50 GMT
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Thanks for your reply, I was wondering if there was a way to shrink the phi derivation!

About the symmetry in fft, here is why I thought it had to be point symmetric about the centre. The FFT of a function f_{kj} is given by (for a square array of side dimension N):

F_{m,p} = (1/N^2) sum_{k,j} f_{k,j} exp[-2pi i (km + jp)/N] eqn. [1]

Now, if the array in fourier space has its origin at the centre of the array, then the point (m, p) is centrally opposite to (N-m, N-p). And the FFT for this point is:

F_{N-m,N-p} = (1/N^2) sum_{k,j} f_{k,j} exp[-2pi i (k(N-m) + j(N-p))/N]
= (1/N^2) sum_{k,j} f_{k,j} exp[2pi i (km + jp)/N] exp[-2pi i (k+ j)]
= (1/N^2) sum_{k,j} f_{k,j} exp[2pi i (km + jp)/N] eqn. [2]

which is the complex conjugate of eqn [1] if f_{k,j} is real.

Please let me know if you don't agree.

Thanks,

Pitufa.