Subject: Inverse 3D FFT
Posted by ntigris@gmail.com on Tue, 05 Jul 2005 19:39:05 GMT
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Hello,

We need to fourier-transform a complex velocity field in wavenumber space into a real velocity field in physical space. So i'm not sure about the proper input to the inverse FFT function.

We'll have a cube in k-space, 128 on a side, filled with complex V [velocity] values. Since we're dealing with a real velocity field in the physical space, it looks like, in the k-space, we should have another cube, such that v(-Kx, -Ky, -Kz) = v(Kx, Ky, Kz)* [a property of the Fourier Transform]. So we end up with a centrally symmetric system of two cubes in k-space.

Is that right so far?

Now, for the FFT algorithm we need to have all the complex conjugates (corresponding to k = -127...0) in positions k = 127...255. So our input to the FFT seems to be two cubes:

(1) kx = 0...127, ky = 0...127, kz = 0...127 with V's
AND
(2) kx = 127...255, ky = 127...255, kz = 127...255 with complex conjugates of the respective V's.

Would this input produce the correct results?

Thanks a lot!!