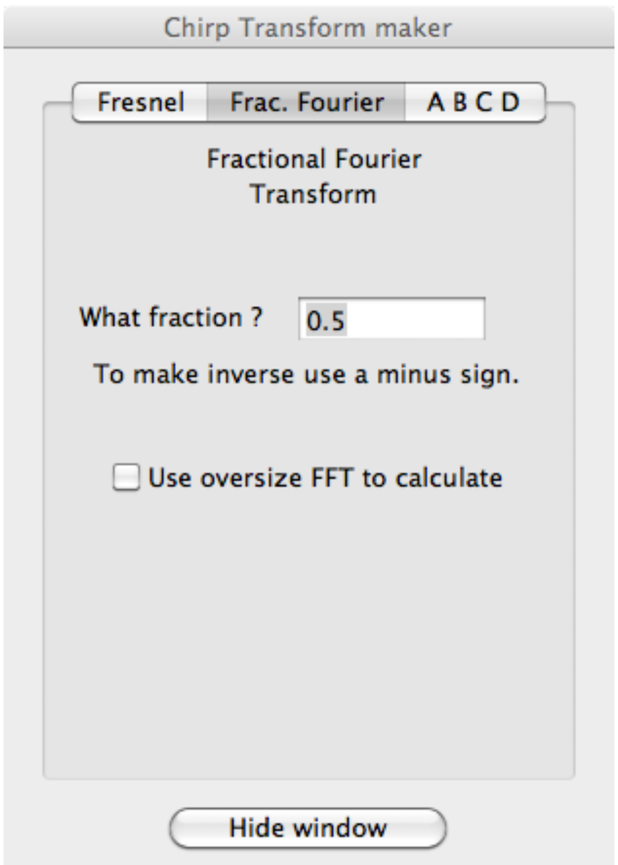
convolutions, however there is a loss of band width. To beat both effects run the script in a larger array with the smaller input and without checking this box.

The batch file options works the same here as in the “direct propagation” icon. At each invocation of the icon a new record is read from a text file up to the next carriage return or newline. The first four values are entered into the text fields of the window. If the entry is zero then the original value in the text field is not replaced. This will continue until a zero is found in the first (distance) field. Execution of the script will then stop or the script will branch if a green alternate line originates at the icon.

FRACTIONAL FOURIER TRANSFORM



$\begin{pmatrix} \cos\theta & f_c \sin\theta \\ \frac{-\sin\theta}{f_c} & \cos\theta \end{pmatrix}$ is the ray matrix representing a Fractional Fourier Transform. A Fourier Transform corresponds to a choice of $\theta = \pi/2$. The number in this field is used to multiply $\pi/2$. This matrix is realized by the same five steps and the Fresnel Transform.

1)a lens function
2)a inverse FFT
3)a lens function
4)an FFT
5)a lens function

Using s as the fraction, phases for the lens functions are as follows.

$$\phi_1 = \phi_5 = \frac{\pi(\cos(\pi s/2) - 1)}{N \sin(\pi s/2)}(n^2 + m^2)$$

$$\phi_3 = \frac{\pi \sin(\pi s/2)}{N}(n^2 + m^2)$$

In this case when the “Use oversize FFT” option is turned on, only the N in ϕ_3 changes, and it changes to $4N$.

$$\begin{pmatrix} 1 & 0 \\ \frac{\cos\alpha - 1}{f_c \sin\alpha} & 1 \end{pmatrix} \begin{pmatrix} 0 & f_c \\ \frac{-1}{f_c} & 0 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ \frac{-\sin\alpha}{f_c} & 1 \end{pmatrix} \begin{pmatrix} 0 & -f_c \\ \frac{1}{f_c} & 0 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ \frac{\cos\alpha - 1}{f_c \sin\alpha} & 1 \end{pmatrix}$$

$$f_c = N\Delta^2/\lambda$$