$d(s, r, t)$

S

γ

$h \equiv r - s$

$$y \equiv (s + r)/2$$

$d(s = y - h/2, r = y + h/2, t)$

h

p_s

$$p_s \equiv \left.\frac{\partial t}{\partial h}\right|_s$$

τ_s

$$S(s, p_s, \tau_s) \equiv \int d(s, r = s + h, t = \tau_s + p_s h) dh$$

$$d(s,r,t) \equiv \int \exp(i2\pi f t)\tilde{d}(s,r,f)df.$$

$$\tilde{S}(s, p_s, f_s) = \int \exp(-i2\pi f_s \tau_s) S(s, p_s, \tau_s) d\tau_s.$$

$$\tilde{S}(s, p_s, f_s) = \int\int\int \exp(-i2\pi f_s \tau_s) \exp(i2\pi f(\tau_s + p_s h)) \tilde{d}(s, r = s + h, f) dh df d\tau_s.$$

$\tilde{S}(s, p_s, f_s)$

$$\int\int\{\int \exp[-i2\pi(f_s - f)\tau_s]d\tau_s\}\exp(i2\pi f p_s h)\tilde{d}(s, r = s + h, f)dhdf$$

$$\int\int \{\delta(f_s - f)\} \exp(i2\pi f p_s h) \tilde{d}(s, r = s + h, f) dh df$$

$$\int \exp(i2\pi f_s p_s h)\tilde{d}(s, r = s + h, f = f_s)dh.$$

$$\delta(f) = \int \exp(-i2\pi f t) dt$$

$$\int g(f)\delta(f - f_0)df = g(f_0)$$

y

$$Y(y, p_y, \tau_y) \equiv \int d(s = y - h/2, r = y + h/2, t = \tau_y + p_y h) dh$$

$$p_y = \left.\frac{\partial t}{\partial h}\right|_y .$$

τ_y

$$\tilde{Y}(y, p_y, f_y) = \int \exp(i2\pi f_y p_y h)\tilde{d}(s = y - h/2, r = y + h/2, f = f_y)dh.$$

$$\widetilde{\widetilde{S}}(k_s, p_s, f_s)$$

$$\int \exp(-i2\pi k_s s)\tilde{S}(s, p_s, f_s)ds$$

$$\int\int \exp(-i2\pi k_s s)\exp(i2\pi f_s p_s h)\tilde{d}(s, r = s + h, f = f_s)dhds$$

$$(k_y, p_y, f_y) = \int \exp(-i2\pi k_y y)\tilde{Y}(y, p_y, f_y)dy$$

$$\int\int \exp(-i2\pi k_y y)\exp(i2\pi f_y p_y h)\tilde{d}(s=y-h/2, r=y+h/2, f=f_y)dhdy.$$

$\partial(h, y)/\partial(h, s) = 1$

$$y = s + h/2$$

(k_y, p_y, f_y)

$$\int\int \exp[-i2\pi k_y(s+h/2)]\exp(i2\pi f_y p_y h)\tilde{d}(s, r=s+h, f=f_y)dsdy$$

$$\int\int \exp(-i2\pi k_y s)\exp[i2\pi f_y h(p_y - k_y/2f_y)]\tilde{d}(s, r = s + h, f = f_y)dsdy$$

$$\tilde{\tilde{S}}(k_s = k_y, p_s = p_y - k_y/2f_y, f_s = f_y).$$

p_y

$$-k_y/f_y = \left.\frac{\partial \tau_y}{\partial y}\right|_{p_y} = \left.\frac{\partial t}{\partial y}\right|_{h}.$$

$$p_s = p_y - k_y/2f_y$$

$$\left.\frac{\partial t}{\partial h}\right|_s = \left.\frac{\partial t}{\partial h}\right|_y + \frac{1}{2}\left.\frac{\partial t}{\partial y}\right|_h .$$