Fouriertransformen

$$f(t) \quad \overset{\mathcal{F}}{\rightleftharpoons} \quad \int_{-\infty}^{\infty} f(t)\, e^{-i\,\omega\,t}\, dt = \hat{f}(\omega)$$

Transformregler

	$f(t)$	$\hat{f}(\omega)$
Lineäritet	$\alpha\, f_1(t) + \beta\, f_2(t)$	$\alpha\, \hat{f}_1(\omega) + \beta\, \hat{f}_2(\omega)$
$t-$derivering	$f'(t)$	$i\,\omega\,\hat{f}(\omega)$
$\omega-$derivering	$-i\,t\,f(t)$	$\frac{d\hat{f}(\omega)}{d\omega}$
$t-$translation	$f(t-t_0)$	$e^{-i\,\omega\,t_0}\,\hat{f}(\omega)$
$\omega-$translation	$e^{i\,t\,\omega_0}\,f(t)$	$\hat{f}\,(\omega-\omega_0)$
Skalning	$f(a\,t), \quad a \neq 0$	$\frac{1}{\lvert a\rvert}\hat{f}\left(\frac{\omega}{a}\right)$
	$f(-t)$	$\hat{f}(-\omega)$
Symmetri	$\hat{f}(t)$	$2\pi\, f(-\omega)$
Faltning	$\int_{-\infty}^{\infty} f(u)\, g(t-u)\, du$	$\hat{f}(\omega)\,\hat{g}(\omega)$

Speciella transformpar

$\delta(t)$	1
$\sqcap_{-\frac{1}{2},\frac{1}{2}}(t)$	$\operatorname{sinc}\left(\frac{\omega}{2}\right) = \frac{\sin\left(\frac{\omega}{2}\right)}{\frac{\omega}{2}}$
$\Lambda_{-1,1}(t)$	$\operatorname{sinc}^2\left(\frac{\omega}{2}\right) = \frac{\sin^2\left(\frac{\omega}{2}\right)}{\left(\frac{\omega}{2}\right)^2}$
$e^{-\lvert t\rvert}$	$\frac{2}{\omega^2+1}$
$e^{-t}\,\theta(t)$	$\frac{1}{i\,\omega+1} = \frac{1}{\omega^2+1} - \frac{i\,\omega}{\omega^2+1}$
$e^{-\frac{t^2}{2}}$	$e^{-\frac{\omega^2}{2}}\,\sqrt{2\,\pi}$

Plancharels formler

$$\int_{-\infty}^{\infty} \lvert f(t)\rvert^2\, dt = \frac{1}{2\,\pi}\int_{-\infty}^{\infty} \left\lvert \hat{f}(\omega)\right\rvert^2 d\omega \qquad \int_{-\infty}^{\infty} f(t)\,\overline{g\,(t)}\, dt = \frac{1}{2\,\pi}\int_{-\infty}^{\infty} \hat{f}(\omega)\,\overline{\hat{g}\,(\omega)}\, d\omega$$