Tablo: Fourier Cos ve Sin dönüşümlerinin temel özellikleri

Özellik	$f(t)$ / $F_c(\omega)/F_s(\omega)$	$F_c(\omega)=\int_0^\infty f(t)Cos(\omega t)dt\ ,\ \omega>0$	$F_s(\omega)=\int_0^\infty f(t)Sin(\omega t)dt\ ,\ \omega>0$
Doğrusal	$\alpha f_1(t)+\beta f_2(t)$	$\alpha F_{c1}(\omega)+\beta F_{c2}(\omega)$	$\alpha F_{s1}(\omega)+\beta F_{s2}(\omega)$
Zamanda ölçekleme	$f(\alpha t)$ $\alpha>0$	$\frac{1}{\alpha}F_c\left(\frac{\omega}{\alpha}\right)$	$\frac{1}{\alpha}F_s\left(\frac{\omega}{\alpha}\right)$
Zamanda öteleme	$f(t-\alpha)$	$Cos(\alpha\omega)F_c\{f(t)\}-Sin(\alpha\omega)F_s\{f(t)\}$	$Cos(\alpha\omega)F_s\{f(t)\}+Sin(\alpha\omega)F_c\{f(t)\}$
Frekansta öteleme	$F_c(\omega\pm\alpha)$, $F_s(\omega\pm\alpha)$	$F_c\{f(t)Cos(\alpha\omega)\}\mp F_s\{f(t)Sin(\alpha\omega)\}$	$F_s\{f(t)Cos(\alpha\omega)\}\pm F_c\{f(t)Sin(\alpha\omega)\}$
Zamanda türev	$f'(t)$	$-\sqrt{\frac{2}{\pi}}f(0)+\omega F_s\{f(t)\}$	$\omega F_c\{f(t)\}$
Frekansta türev	$F_c^{(2n)}(\omega)$	$F_c\{(-1)^n t^{2n}f(t)\}$	$F_s\{(-1)^n t^{2n}f(t)\}$
	$F_c^{(2n+1)}(\omega)$	$F_c\{(-1)^{n+1}t^{2n+1}f(t)\}$	$F_s\{(-1)^{n+1}t^{2n+1}f(t)\}$
Zamanda integral	$\int_t^\infty f(\tau)d\tau$	$\frac{1}{\omega}F_s(f(t))$	$\frac{1}{\omega}F_c(f(t))$
Frekansta integral	$\int_\omega^\infty F_c(\tau)d\tau$, $\int_\omega^\infty F_s(\tau)d\tau$	$F_s\left\{-\frac{f(t)}{t}\right\}$	$F_c\left\{\frac{f(t)}{t}\right\}$
Tersleme	F_c , F_s	$F_c=F_c^{-1}$	$F_s=F_s^{-1}$
Asimptot	$F_c(\omega)$, $F_s(\omega)$	$\lim_{\omega\to\infty}F_c(\omega)=0$	$\lim_{\omega\to\infty}F_s(\omega)=0$
	$f(\alpha t)Cos(\beta t)$ $\alpha,\beta>0$	$\frac{1}{2\alpha}\left\{F_c\left(\frac{\omega+\beta}{\alpha}\right)+F_c\left(\frac{\omega-\beta}{\alpha}\right)\right\}$	$\frac{1}{2\alpha}\left\{F_s\left(\frac{\omega+\beta}{\alpha}\right)+F_s\left(\frac{\omega-\beta}{\alpha}\right)\right\}$
	$f(\alpha t)Sin(\beta t)$ $\alpha,\beta>0$	$\frac{1}{2\alpha}\left\{F_s\left(\frac{\omega+\beta}{\alpha}\right)-F_s\left(\frac{\omega-\beta}{\alpha}\right)\right\}$	$-\frac{1}{2\alpha}\left\{F_c\left(\frac{\omega+\beta}{\alpha}\right)-F_c\left(\frac{\omega-\beta}{\alpha}\right)\right\}$
	$t^{2n}f(t)$	$(-1)^n\frac{d^{2n}}{d\omega^{2n}}F_c(\omega)$	$(-1)^n\frac{d^{2n}}{d\omega^{2n}}F_s(\omega)$
	$t^{2n+1}f(t)$	$(-1)^n\frac{d^{2n+1}}{d\omega^{2n+1}}F_s(\omega)$	$(-1)^n\frac{d^{2n+1}}{d\omega^{2n+1}}F_c(\omega)$

$\int_t^\infty f(\tau)d\tau\leftrightarrow\frac{1}{\omega}F_s(\omega)$	$f_o(t+\alpha)+f_o(t-\alpha)\leftrightarrow 2F_s(\omega)Cos(\alpha\omega)$
$f(t+\alpha)-f_o(t-\alpha)\leftrightarrow 2F_s(\omega)Sin(\alpha\omega)$, $\alpha>0$	$f_e(t-\alpha)-f_e(t+\alpha)\leftrightarrow 2F_c(\omega)Sin(\alpha\omega)$

Tablo: Ayrık Cos ve Sin dönüşümü ifadeleri

DCT	DST
$X_c[i] = \sqrt{\frac{2}{N}} \sum_{j=0}^{N} k_i k_j Cos\left(\frac{ij\pi}{N}\right) x[j]$	$X_s[i] = \sqrt{\frac{2}{N}} \sum_{j=1}^{N-1} Sin\left(\frac{ij\pi}{N}\right) x[j]$
$x[j] = \sqrt{\frac{2}{N}} \sum_{j=0}^{N} k_i k_j Cos\left(\frac{ij\pi}{N}\right) X_c[i]$	$x[j] = \sqrt{\frac{2}{N}} \sum_{j=1}^{N-1} Sin\left(\frac{ij\pi}{N}\right) X_s[i]$
$k_i = \begin{cases} 1 & , \quad i \neq 0, N \\ 1/\sqrt{2} & , \quad i = 0, N \end{cases}$	

Tablo: Normalize edilmiş DCT ve DST ifadeleri

DCT		
p pozitif tamsayı, $N = 2^p$, $k_i = \begin{cases} 1 & , \quad i \neq 0, N \\ 1/\sqrt{2} & , \quad i = 0, N \end{cases}$		
DCT-I	$\left[C_{N+1}^{I}\right]_{mn} = \sqrt{\frac{2}{N}} \left[k_m k_n Cos\left(\frac{mn\pi}{N}\right)\right]$	$m, n = 0, 1, \ldots, N$
DCT-II	$\left[C_{N}^{II}\right]_{mn} = \sqrt{\frac{2}{N}} \left[k_n Cos\left(\frac{(2m+1)n\pi}{2N}\right)\right]$	$m, n = 0, 1, \ldots, N-1$
DCT-III	$\left[C_{N}^{III}\right]_{mn} = \sqrt{\frac{2}{N}} \left[k_m Cos\left(\frac{(2n+1)m\pi}{2N}\right)\right]$	$m, n = 0, 1, \ldots, N-1$
DCT-IV	$\left[C_{N}^{IV}\right]_{mn} = \sqrt{\frac{2}{N}} \left[Cos\left(\frac{(2m+1)(2n+1)\pi}{4N}\right)\right]$	$m, n = 0, 1, \ldots, N-1$
DST		
p pozitif tamsayı, $N = 2^p$, $k_i = \begin{cases} 1 & , \quad i \neq N-1 \\ 1/\sqrt{2} & , \quad i = N-1 \end{cases}$		
DST-I	$\left[S_{N-1}^{I}\right]_{mn} = \sqrt{\frac{2}{N}} \left[Sin\left(\frac{(m+1)(n+1)\pi}{N}\right)\right]$	$m, n = 0, 1, \ldots, N-2$
DST-II	$\left[S_{N}^{II}\right]_{mn} = \sqrt{\frac{2}{N}} \left[k_n Sin\left(\frac{(2m+1)(n+1)\pi}{2N}\right)\right]$	$m, n = 0, 1, \ldots, N-1$
DST-III	$\left[S_{N}^{III}\right]_{mn} = \sqrt{\frac{2}{N}} \left[k_m Sin\left(\frac{(2n+1)(m+1)\pi}{2N}\right)\right]$	$m, n = 0, 1, \ldots, N-1$
DST-IV	$\left[S_{N}^{IV}\right]_{mn} = \sqrt{\frac{2}{N}} \left[Sin\left(\frac{(2m+1)(2n+1)\pi}{4N}\right)\right]$	$m, n = 0, 1, \ldots, N-1$

Tablo: DCT ve DST matrisleri arasındaki ilişkiler

DCT	DST
$\left[C_{N+1}^{I}\right]^{-1} = \left[C_{N+1}^{I}\right]^{T} = \left[C_{N+1}^{I}\right]$	$\left[S_{N+1}^{I}\right]^{-1} = \left[S_{N+1}^{I}\right]^{T} = \left[S_{N+1}^{I}\right]$
$\left[C_{N}^{II}\right]^{-1} = \left[C_{N}^{II}\right]^{T} = \left[C_{N}^{III}\right]$	$\left[S_{N}^{II}\right]^{-1} = \left[S_{N}^{II}\right]^{T} = \left[S_{N}^{III}\right]$
$\left[C_{N}^{III}\right]^{-1} = \left[C_{N}^{III}\right]^{T} = \left[C_{N}^{II}\right]$	$\left[S_{N}^{III}\right]^{-1} = \left[S_{N}^{III}\right]^{T} = \left[S_{N}^{II}\right]$
$\left[C_{N}^{IV}\right]^{-1} = \left[C_{N}^{IV}\right]^{T} = \left[C_{N}^{IV}\right]$	$\left[S_{N}^{IV}\right]^{-1} = \left[S_{N}^{IV}\right]^{T} = \left[S_{N}^{IV}\right]$