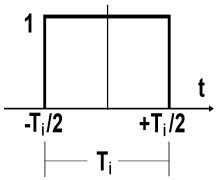
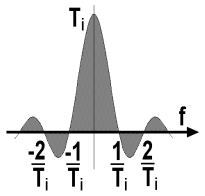
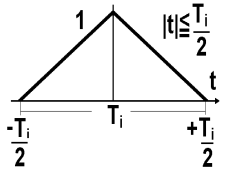
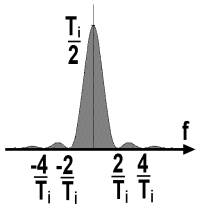
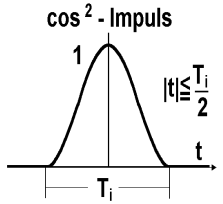
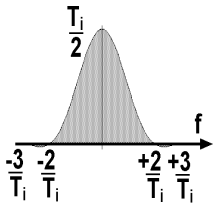
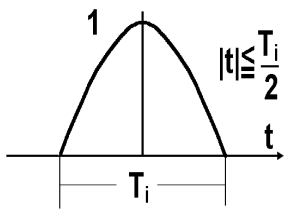
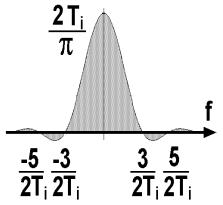
Korrespondenzen der FT

Zeitfunktion s(t) ○—●	Spektralfunktion S(f)	Fourierkoeffizienten a_0, a_n, b_n
$s(t) = 1$ $\left(Bereich\ -\frac{T_i}{2} \le t \le +\frac{T_i}{2}\right)$ Rechteck - Impuls 	$S(f) = T_i \frac{\sin(\pi f T_i)}{\pi f T_i}$ 	$a_0 = 2\frac{T_i}{T}$ $a_n = 2\frac{T_i}{T} \cdot \frac{\sin\left(n\pi\frac{T_i}{T}\right)}{n\pi\frac{T_i}{T}}$ $b_n = 0$ Sonderfall: T=2T_i : (Rechteck-Schwingung) $a_0 = 1$ $a_n = (-1)^{\frac{n-1}{2}} \cdot \frac{2}{n\pi}$ $n = 1, 3, 5, 7,$
$s(t) = 1 - 2\frac{\lvert t\rvert}{T_i}$ $\left(Bereich\ -\frac{T_i}{2} \le t \le +\frac{T_i}{2}\right)$ Dreieck - Impuls 	$S(f) = \frac{T_i}{2}\left(\frac{\sin(\pi f\frac{T_i}{2})}{\pi f\frac{T_i}{2}}\right)^2$ 	$a_0 = \frac{T_i}{T}$ $a_n = \frac{T_i}{T}\left(\frac{\sin\left(n\pi\frac{T_i}{2T}\right)}{n\pi\frac{T_i}{2T}}\right)^2$ $b_n = 0$ Sonderfall: T=T_i : (Dreieck-Schwingung) $a_0 = 1$ $a_n = \frac{4}{\pi^2} \cdot \frac{1}{n^2}$ $n = 1, 3, 5, 7,$

Zeitfunktion s(t) ○—●	Spektralfunktion S(f)	Fourierkoeffizienten a_0, a_n, b_n
$s(t) = \cos^2\left(\pi\frac{t}{T_i}\right)$ $= \frac{1}{2}\left(1 + \cos 2\pi\frac{t}{T_i}\right)$ cos ² - Impuls 	$S(f) = \frac{T_i}{2} \cdot \frac{\sin(\pi f T_i)}{\pi f T_i (1 - (f T_i)^2)}$ 	$a_0 = \frac{T_i}{T}$ $a_n = \frac{T_i}{T} \cdot \frac{\sin\left(n\pi\frac{T_i}{T}\right)}{n\pi\frac{T_i}{T}\left(1 - \left(n\frac{T_i}{T}\right)^2\right)}$ $b_n = 0$
$s(t) = \cos\left(\pi\frac{t}{T_i}\right)$ cos - Impuls 	$S(f) = \frac{2T_i}{\pi} \cdot \frac{\cos(\pi f T_i)}{1 - (2 f T_i)^2}$ 	$a_0 = \frac{4}{\pi} \cdot \frac{T_i}{T}$ $a_n = \frac{4}{\pi} \cdot \frac{T_i}{T} \cdot \frac{\cos\left(n\pi\frac{T_i}{T}\right)}{1 - \left(2n\frac{T_i}{T}\right)^2}$ $b_n = 0$

Skript, Tabelle 2.2.