Transformátorova tabulka

31. prosince 2003

1 Fourierova transformace

$$\mathcal{F}[f(x)] = \int_{\mathbb{R}^n} f(x) \cdot e^{i(x,\xi)} dx$$

1. $$\mathcal{F}[f(x)](\eta) = (2\pi)^n \mathcal{F}^{-1}[f(\xi)](-\eta)$$

2. $$\mathcal{F}[D^\beta f(x)] = (-i\xi)^\beta \mathcal{F}[f]$$

3. $$\mathcal{F}[f(x - x_0)] = e^{i\xi x_0} \mathcal{F}[f]$$

4. $$\mathcal{F}[f \star g] = \mathcal{F}[f] \cdot \mathcal{F}[g]$$

5. $$D^\beta \mathcal{F}[f(x)] = \mathcal{F}[(ix)^\beta f(x)]$$

2 Laplaceova transformace

$$\mathcal{L}[f(t)] = \int_{\mathbb{R}} f(t)e^{-pt}dt$$

1. $$\mathcal{L}[\dot{f}(t)] = p \cdot \mathcal{L}[f(t)] - f(0_+)$$

2. $$\mathcal{L}[f(t)] = F(p)$$
$$\int_0^{+\infty} f(t)dt = \lim_{p\to 0_+} F(p)$$

3. $$\mathcal{L}[e^{-at}f(t)] = F(p+a)$$

4. $$\mathcal{L}[\int_0^t f(\tau)d\tau] = \frac{\mathcal{L}[f(t)]}{p}$$

5. $$\mathcal{L}[f \star g] = \mathcal{L}[f] \cdot \mathcal{L}[g]$$

6. $$\mathcal{L}[\Theta(t)t^\alpha] = \frac{\Gamma(\alpha+1)}{p^{\alpha+1}}$$

7. $$\mathcal{L}[t^n f(t)] = (-1)^n \frac{d^n \mathcal{L}[f(t)]}{dp^n}$$

8. $$\mathcal{L}[\frac{f(t)}{t}] = \int_p^{+\infty} \mathcal{L}[f(t)](q)dq$$

9. $$\int_0^{+\infty} f(t)\mathcal{L}[q(t)](t)dt = \int_0^{+\infty} \mathcal{L}[f(t)](t)g(t)dt$$

3 Známé transformované funkce

1. $$\mathcal{L}[\delta(t-\tau)] = e^{-\tau p}$$

2. $$\mathcal{L}[\Theta(t)] = \frac{1}{p}$$

3. $$\mathcal{L}[\Theta(t) \cdot \sin \beta t] = \frac{\beta}{p^2 + \beta^2}$$

4. $$\mathcal{L}[\Theta(t) \cdot \cos \beta t] = \frac{p}{p^2 + \beta^2}$$

5. $$\mathcal{L}[\Theta(t) e^{\mu t} \cos \omega t] = \frac{p-\mu}{(p-\mu)^2 + \omega^2}$$

6. $$\mathcal{L}[\Theta(t) e^{\mu t} \sin \omega t] = \frac{\omega}{(p-\mu)^2 + \omega^2}$$

7. $$\mathcal{L}[\Theta(t) \sinh \omega t] = \frac{\omega}{p^2 - \omega^2}$$

8. $$\mathcal{L}[\Theta(t) \cosh \omega t] = \frac{p}{p^2 - \omega^2}$$