

10.6.08 'ע"מ פ"י

243310

DFT-d 2022 2023

2023

$$y_k = \sum_{j=0}^{N-1} a_j \omega^{jk} \quad (DFT)$$

$$a_j = \frac{1}{N} \sum_{k=0}^{N-1} y_k \omega^{-jk} \quad (DFT^{-1})$$

2023 \Rightarrow 3. $\omega = e^{\frac{2\pi i}{N}}$ $\omega = e^{\frac{2\pi i}{N}}$

$F_{1/N} \rightarrow e^{-i\omega x}$ $\omega = e^{\frac{2\pi i}{N}}$ $\omega = e^{\frac{2\pi i}{N}}$

$$f_k(n) = c_n = \frac{1}{2\pi} \int_{-\pi}^{\pi} f(x) e^{-inx} dx \quad (n=0, \pm 1, \pm 2, \dots)$$

(f \in L^1 \Rightarrow $c_n \rightarrow 0$)

$$f(x) \sim \sum_{n=-\infty}^{\infty} c_n e^{inx}$$

$$S_k \left(\int_{-\pi}^{\pi} |f(x)|^2 dx < \infty \right) \quad f \in L^2[-\pi, \pi] \quad (Riesz)$$

$$L^2 \text{ norm } \int_{-\pi}^{\pi} |f(x)|^2 dx = \sum_{n=-\infty}^{\infty} |c_n|^2 \quad (Parseval)$$

\times B_{∞} \hookrightarrow $\sum_{n=-\infty}^{\infty} f(x) \quad [Carleson \text{ } \omega_{\theta}]$

$$\sum_{n=-\infty}^{\infty} f(x) \quad S_k \quad f \in C^2[-\pi, \pi] \quad \text{all}$$

(\times B_{∞} \hookrightarrow $\sum_{n=-\infty}^{\infty} f(x)$)

2 (norms) \Rightarrow $\sum_{n=-\infty}^{\infty} f(x)$ \Rightarrow $\sum_{n=-\infty}^{\infty} f(x)$

$$f(x) \sim \sum_{n=-\infty}^{\infty} c_n e^{inx} \quad f \in L^1 \rightarrow c_n \rightarrow 0$$

(norms) \Rightarrow $\sum_{n=-\infty}^{\infty} f(x)$ \Rightarrow $\sum_{n=-\infty}^{\infty} f(x)$

829-830 \Rightarrow $\sum_{n=-\infty}^{\infty} f(x)$

30.1-1
30.1-2
30.1-5
30.1-7

(30.1) \Rightarrow $\sum_{n=-\infty}^{\infty} f(x)$

$$C(x) = \sum_{j=0}^{2n-2} c_j x^j$$

(30.2) \Rightarrow $\sum_{n=-\infty}^{\infty} f(x)$

$$c_j = \sum_{k=0}^j c_k b_{j-k}$$

844 \Rightarrow 30-2