2. Preliminary considerations

$$D_{c} = \left\{ (p \quad p) \quad \sqrt{p \quad p} \leqslant c \right\},$$

$$f(\mathbf{x}) = f(\quad , \quad) = \frac{\quad}{(\quad)} \int_{D_{c}} f(p \quad p) \quad p \quad p .$$

$B = [- \quad , \quad] \times [- \quad , \quad]$ … c … $W = c/$ … W … $L(B)$ … $L(D_{c})$ …

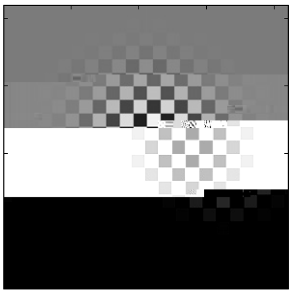
$$\langle f, \quad \rangle_B = \int_B f(\mathbf{x}) \quad (\mathbf{x}) \quad \mathbf{x}$$

$\mathbf{x} \in B$

$$_c(\mathbf{y}) = \int_B K_c(\mathbf{y} - \mathbf{z}) \; _c(\mathbf{z}) \; \mathbf{z},$$

$\mathbf{y}, \mathbf{z} \in B$, $=$ $, , , \ldots$ $>$ $>$ $\geqslant$ $\geqslant \cdots$ $_c =$

$$\| \quad \|_B = \left(\int_B | \quad (\mathbf{z}) | \quad \mathbf{z} \right)^{/} = .$$



$\mathbf{f}_\omega$ $\mathbf{g}_\omega$ $\mathbf{x}^\omega$

$$F_{\omega,c} : \mathbb{C}^{N_\omega}_\omega \to L_{D,c},$$

$$\hat{f}_\omega(\mathbf{p}) = F_{\omega,c}\mathbf{f}_\omega(\mathbf{p}) = \sum^{N_\omega-1} \omega \; f(\mathbf{x}^\omega)\, e^{-i c \mathbf{p}\cdot\mathbf{x}^\omega},$$

$\mathbb{C}^{N_\omega}_\omega$ $L_{D,c}$

$$F^*_{\omega,c} : L_{D,c} \to \mathbb{C}^{N_\omega}_\omega, \qquad F^*_{\omega,c} \; = \frac{c}{\;} \int_D \;(\mathbf{p})\, e^{i c \mathbf{p}\cdot\mathbf{x}^\omega} \, d\mathbf{p},$$

$\mathbf{x}^\omega$ ω^ω $Q_{\omega,c} = F^*_{\omega,c} F_{\omega,c}$

$$Q_{\omega,c} : \mathbb{C}^{N_\omega}_\omega \to \mathbb{C}^{N_\omega}_\omega, \qquad Q_{\omega,c}\mathbf{f}_\omega \; = \frac{c}{\;} \int_D \hat{f}_\omega(\mathbf{p})\, e^{i c \mathbf{p}\cdot\mathbf{x}^\omega} \, d\mathbf{p},$$

$$(Q_{\omega,c}) \;\; = K_c\left(\frac{-}{\;}, \frac{-}{\;}\right)\omega$$

$Q_{\omega,c}$

$$\omega \;\; \omega = \sum^{N_\omega-1} \sqrt{\omega}\, K_c\left(\frac{-}{\;}, \frac{-}{\;}\right) \sqrt{\omega} \;\; \omega,$$

$\omega = \{ \; \omega \; \}^{N_\omega-1}$ $Q_{\omega,c}$

$$\omega = \left\{ \frac{1}{\sqrt{\omega}} \; \omega \right\}^{N_\omega-1},$$

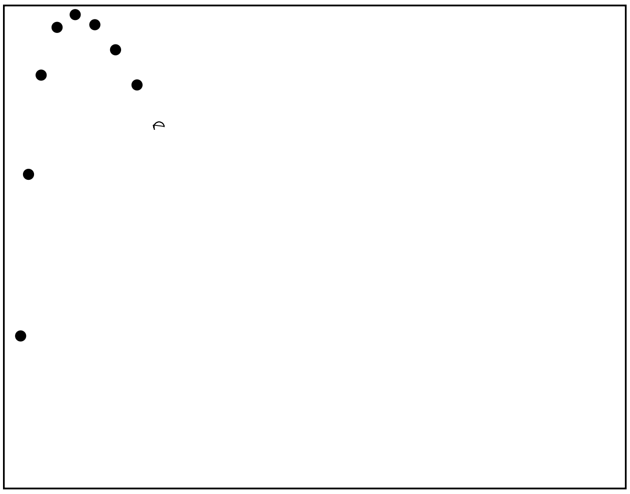
$$Q_{\omega,c} \; \omega = \; \omega.$$

ω

$$\langle \; \omega, \; \omega \rangle_\omega = \; .$$

[illegible]

3. Discretization of the kernel



Proposition 4.2. 3.1,

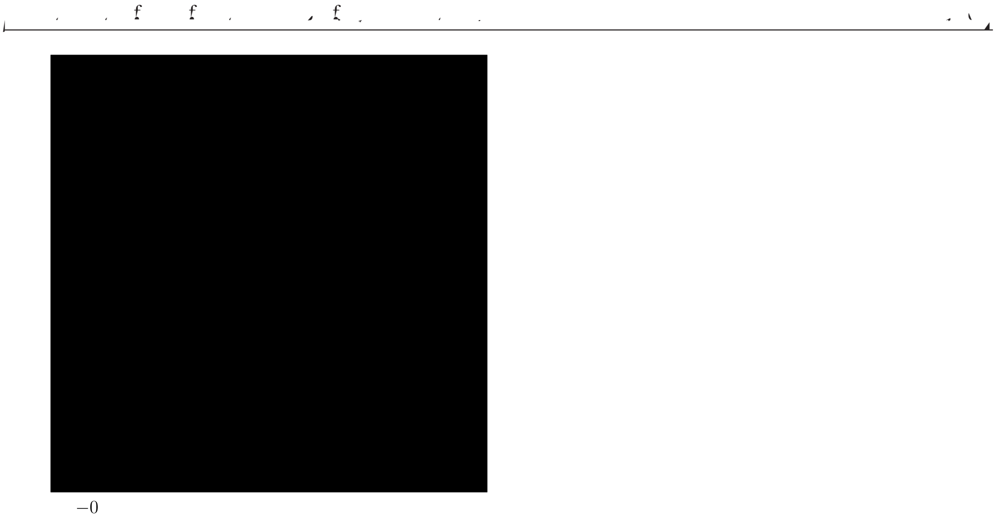
f … $f \in \mathbb{C}_{\omega}^{N_\omega}$ … A

$A = EW$ … e … f … W …

… ω …

$$|\langle EWf, f\rangle_{\omega}| = \left|\sum \sum e \ldots \omega \ldots f \ldots \omega \ldots f \right| \leqslant \left|\sum \omega \ldots f \right|,$$

$$\mathbf{d} = \sum_{J}$$


−0

D_c f f

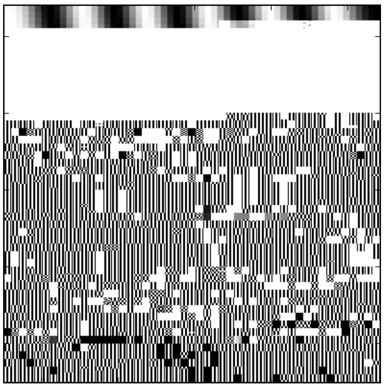
.2.

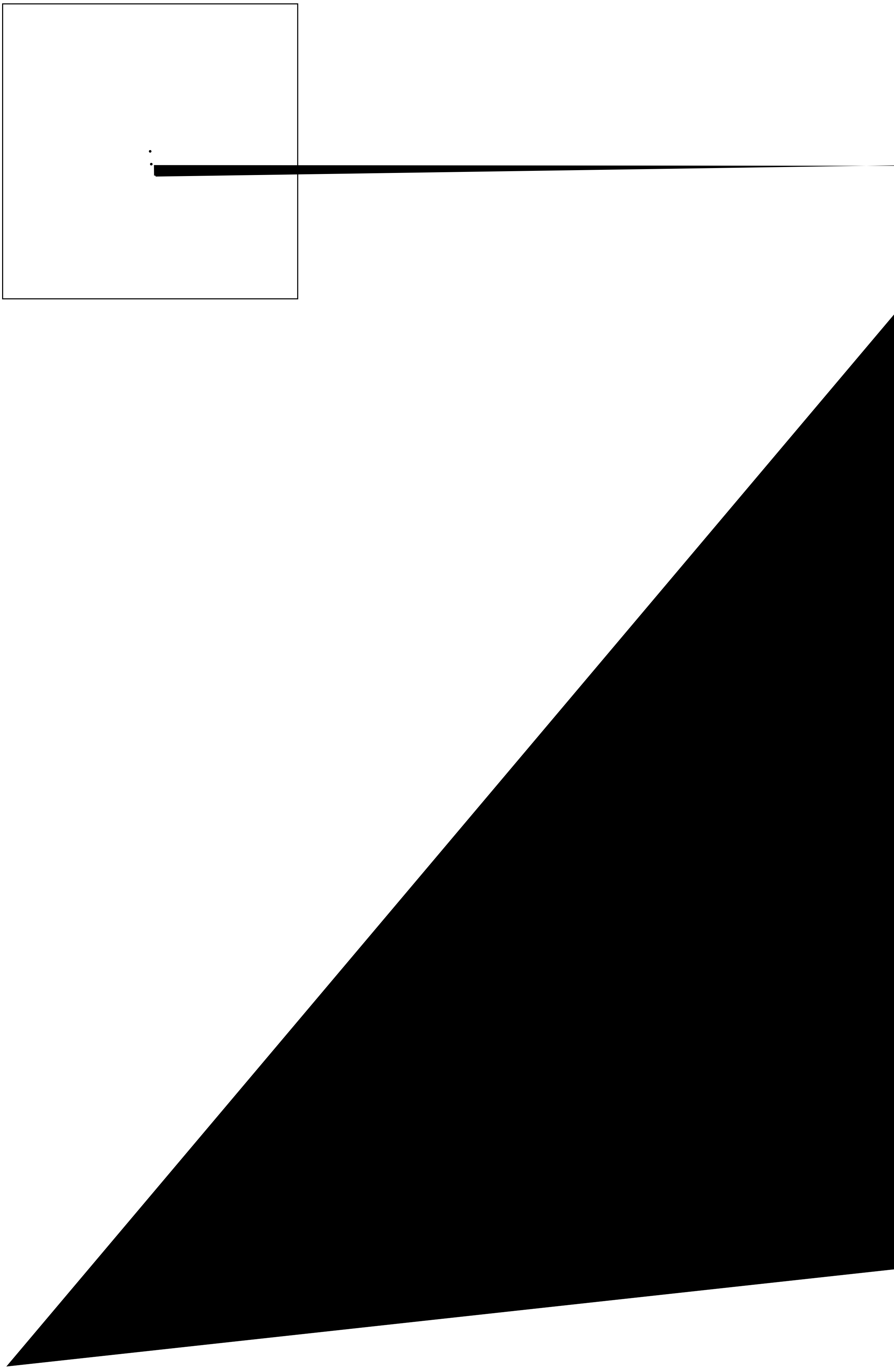
f $G_{\omega, c}$ G_e ff f f f f f f f

$$f(\ ,\ ) = \begin{cases} (\ \ ) & (\ ,\ ) \in B \\ \end{cases}$$

= , = f

$$f'(\ ,\ ) =$$





$$r = \left(\frac{}{L} \right), \quad = , \dots, L - ,$$

$U_{L-}( ) = -$ … $L/$ … L /

Acknowledgments

Appendix A

$d =$ $d =$

.3. 5.1.

$F_\omega = F_{\omega,c}$

$G_\omega = G_{\omega,c}$

$$\mathbf{f} = G_\omega^{\dagger} G_\omega (\mathbf{f} - \mathbf{d}) \quad \mathbf{d}$$

$$\mathbf{f} - \mathbf{f} = (I - G_\omega^{\dagger} G_\omega)(\mathbf{f} - \mathbf{d}) .$$

$$|\langle \mathbf{f} \quad - \mathbf{d}, \quad ^{\omega}\rangle_\omega| \leqslant \frac{C_\omega \|\mathbf{f}\|_\omega}{\omega},$$