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Y. Meyer and S. Roques, edt., Editions Frontieres, 1993

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I Introduction

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$$c^{j;j';m}_{k;k';l} = \int_{-\infty}^{+\infty} \;\; {}^{j}_{k} \;\;) \;\; {}^{j'}_{k'} \;\;) \;\; {}^{m}_{l} \;\;) \, d \;\; M$$

[redacted] e co t ng $c^{j;j';m}_{k;k';l}$ doe [redacted] at [redacted] to N_s^2, [redacted] e N_s [redacted] e ent at on of . [redacted] at a e [redacted] a e et coe c ent [redacted] at N_s [redacted] t ona to [redacted]

II Multiresolution algorithm for evaluating u

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[redacted] ojection on of $\in \mathbf{L}^2(\mathbf{R})$ on space $\mathbf{V_j}$,

$$\mathbf{j} \quad M \quad \mathbf{j} \in \mathbf{V_j} M \qquad (\ .1)$$

[redacted] $\mathbf{L}^2(\mathbf{R})$. In o de to nco e t e nte ac-

[redacted]

$$ {}^2_0 - {}^2_\mathbf{n} - \sum_{\mathbf{j}=1}^{\mathbf{j}=\mathbf{n}} \left[(\ \mathbf{j}-1\ )^2 - (\ \mathbf{j}\ )^2 \right] - \sum_{\mathbf{j}=1}^{\mathbf{j}=\mathbf{n}} (\ \mathbf{j}-1 + \ \mathbf{j}\ )(\ \mathbf{j}-1 - \ \mathbf{j}\ ) \qquad (\ .\ )$$

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$$ {}^2_0 - {}^2_\mathbf{n} - \sum_{\mathbf{j}=1}^{\mathbf{j}=\mathbf{n}} (\ \mathbf{j} + \ \mathbf{j}\ )(\ \mathbf{j}\ ) M \qquad (\ .3)$$

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$$ {}^2_0 - \sum_{\mathbf{j}=1}^{\mathbf{j}=\mathbf{n}} (\ \mathbf{j}\ )(\ \mathbf{j}\ ) + $$

o n u^2 n s s

Let tat y con de ng an

[redacted] en add $d^{\mathbf{j}+1}_{\mathbf{k}}$
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$$\{\hat{c}^{1}_{\mathbf{k}}\} \longrightarrow \{c^{2}_{\mathbf{k}}\} \longrightarrow \{c^{2}_{\mathbf{k}}\}+\{\hat{c}^{2}_{\mathbf{k}}\} \longrightarrow \{c^{3}_{\mathbf{k}}\} \longrightarrow \{c^{3}_{\mathbf{k}}\}+\{\hat{c}^{3}_{\mathbf{k}}\} \cdots$$

$$\{d^{2}_{\mathbf{k}}\} \longrightarrow \{d^{2}_{\mathbf{k}}\}+\{\hat{d}^{2}_{\mathbf{k}}\} \qquad \{d^{3}_{\mathbf{k}}\} \longrightarrow \{d^{3}_{\mathbf{k}}\}+\{\hat{d}^{3}_{\mathbf{k}}\} \cdots \quad (3)$$

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$$\sum_{\mathbf{j}=1}^{\mathbf{j}=\mathbf{n}} \sum_{\mathbf{k}\in\mathbf{Z}} (\hat{d}^{\mathbf{j}}_{\mathbf{k}} + d^{\mathbf{j}}_{\mathbf{k}}) \, \psi^{\mathbf{j}}_{\mathbf{k}}(x) + \sum_{\mathbf{k}\in\mathbf{Z}} (c^{\mathbf{n}}_{\mathbf{k}} + \hat{c}^{\mathbf{n}}_{\mathbf{k}} + \hat{\hat{c}}^{\mathbf{n}}_{\mathbf{k}}) \, \phi^{\mathbf{n}}_{\mathbf{k}}(x) \quad (4)$$

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$$M^{\mathbf{j};\mathbf{j}'}_{\mathbf{www}}(M'M) = \int_{-\infty}^{+\infty} \psi^{\mathbf{j}}_{\mathbf{k}}(x)\, \psi^{\mathbf{j}}_{\mathbf{k}'}(x)\, \psi^{\mathbf{j}'}_{\mathbf{l}}(x)\, dx \quad (5)$$

[redacted] at

$$M^{\mathbf{j};\mathbf{j}'}_{\mathbf{www}}(M'M) = 2^{-\mathbf{j}'/2} \int_{-\infty}^{+\infty} \psi^{\mathbf{j}-\mathbf{j}'}_{0}(x)\, \psi^{\mathbf{j}-\mathbf{j}'}_{\mathbf{k}-\mathbf{k}'}(x)\, \psi^{0}_{2^{j-j'}\mathbf{k}-\mathbf{l}}(x)\, dx \quad (6)$$

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$$M^{j,j'}_{www}(\ M'M) = \ ^{-j'/2}\tilde{M}^{j-j'}_{www}(\ -\ 'M^{j-j'}\ -\ )\qquad (\ )$$

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$$\tilde{M}^{r}_{www}(\ -\ 'M^{r}\ -\ ) = \ ^{-r}\int_{-\infty}^{+\infty} (\ ^{-r}\ )\ (\ ^{-r}\ -\ +\ ')\ (\ -\ ^{r}\ +\ )\, d\ M \qquad (\ 8)$$

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$$|\tilde{M}^{r}_{www}(\ -\ 'M^{r}\ -\ )| \leq C\ ^{-r}\ ^{M} \qquad (\ 9)$$

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$$M^{j}_{VW} : \mathbf{V_j} \times \mathbf{W_j} \to \mathbf{V_j} \bigoplus_{j_0 \leq j' \leq j} \mathbf{W_{j'}} M \qquad (\ 0)$$

and

$$M^{j}_{WW} : \mathbf{W_j} \times \mathbf{W_j} \to \mathbf{V_j} \bigoplus_{j_0 \leq j' \leq j} \mathbf{W_{j'}} \qquad (\ )$$

nce

$$\mathbf{V_j} \bigoplus_{j_0 \leq j' \leq j} \mathbf{W_{j'}} = \mathbf{V_{j_0-1}} M \qquad (\ )$$

and

$$\mathbf{V_j} \subset \mathbf{V_{j_0-1}} M\ \ \mathbf{W_j} \subset \mathbf{V_{j_0-1}} M \qquad (\ 3)$$

[redacted]) on $\mathbf{V_{j_0-1}} \times \mathbf{V_{j_0-1}}$. o t e

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$$\mathbf{V_{j_0-1}} \times \mathbf{V_{j_0-1}} \to \mathbf{V_{j_0-1}} M \qquad (\ 4)$$

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$$M(\ M'M) = \ ^{-j/2}\int_{-\infty}^{+\infty} (\ -\ )\ (\ -\ ')\ (\ -\ )\, d\ M \qquad (\ )$$

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$$M_0(\ M') = \int_{-\infty}^{+\infty} (\ -\ )\ (\ -\ ')\ (\ )\, d \qquad (\ 6)$$

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$$\mathbf{V}_0 \times \mathbf{V}_0 \to \mathbf{V}_0 \qquad (.\ )$$

[redacted] it i ea y to ee t at fo $\in \mathbf{V}_0$,

$$) - \sum_{\mathbf{k}} \mathbf{k} \quad - \quad)M \qquad (.\ 8)$$

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