La oss se på den stykkevis konstante waveleten.

basisfunk i $V_1 \otimes V_1$

Hva blir $\text{proj}_{V_0 \otimes V_0}(\phi_{1,k_1} \otimes \phi_{1,k_2})$ $\quad (\Phi_1 \otimes \Phi_1)$

Vi regner ut $\langle \phi_{1,k_1} \otimes \phi_{1,k_2}, \phi_{0,n_1} \otimes \phi_{0,n_2} \rangle$

$= \langle \phi_{1,k_1}, \phi_{0,n_1} \rangle \langle \phi_{1,k_2}, \phi_{0,n_2} \rangle$ (def. av indreprod.)

Anta for enkelhetsskyld at k_1, k_2 er partall. $k_1 = 4$, $n_1 = 2$

Da er $\langle \phi_{1,k_1}, \phi_{0,n_1} \rangle \neq 0$ kun for $n_1 = \frac{k_1}{2}$

$$\langle \phi_{1,k_1}, \phi_{0,k_1/2} \rangle = \int_{\frac{k_1}{2}}^{\frac{k_1+1}{2}} \underset{2^{m/2}}{\sqrt{2}} \cdot 1 \, dt = \frac{1}{2}\sqrt{2}$$

$\langle \phi_{1,k_2}, \phi_{0,k_2/2} \rangle = \frac{1}{2}\sqrt{2}$ på samme måte

Derfor: $\langle \phi_{1,k_1} \otimes \phi_{1,k_2}, \phi_{0,k_1/2} \otimes \phi_{0,k_2/2} \rangle = \frac{1}{2}\sqrt{2} \cdot \frac{1}{2}\sqrt{2} = \frac{1}{2}$

$\Rightarrow \text{proj}_{V_0 \otimes V_0}(\phi_{1,k_1} \otimes \phi_{1,k_2}) = \frac{1}{2}\phi_{0,k_1/2} \otimes \phi_{0,k_2/2}$ (ingen andre ledd bidrar)

proj. ned på ortogonalkomplementet:

$\phi_{1,k_1} \otimes \phi_{1,k_2} - \text{proj}_{V_0 \otimes V_0}(\phi_{1,k_1} \otimes \phi_{1,k_2})$

$\frac{1}{\sqrt{2}}(\phi_{0,k_1/2} + \psi_{0,k_1/2}) \otimes \frac{1}{\sqrt{2}}(\phi_{0,k_2/2} + \psi_{0,k_2/2}) - \frac{1}{2}\phi_{0,k_1/2} \otimes \phi_{0,k_2/2}$

$\underline{\frac{1}{2}\phi_{0,k_1/2} \otimes \phi_{0,k_2/2}} + \frac{1}{2}\phi_{0,k_1/2} \otimes \psi_{0,k_2/2} + \frac{1}{2}\psi_{0,k_1/2} \otimes \phi_{0,k_2/2}$

$+ \frac{1}{2}\psi_{0,\frac{k_1}{2}} \otimes \psi_{0,k_2/2} - \underline{\frac{1}{2}\phi_{0,k_1/2} \otimes \phi_{0,k_2/2}}$

$$= \underbrace{\frac{1}{2}\phi_{0,k_1/2} \otimes \psi_{0,k_2/2}}_{\text{proj. ned på } W'_{(0,1)}} + \underbrace{\frac{1}{2}\psi_{0,k_1/2} \otimes \phi_{0,k_2/2}}_{W'_{(1,0)}} + \underbrace{\frac{1}{2}\psi_{0,k_1/2} \otimes \psi_{0,k_2/2}}_{W'_{(1,1)}}$$